Telephony

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February 15, 1936

IMPROVING TRANSMISSION In The Small Telephone Plant

By OTTO K. HENRY

FIFTH AND CONCLUDING article in series written especially for the maintenance man of the small telephone exchange. This article describes a transmission testing scheme for magneto substation equipment which the author believes will be well worth the time and small cost any small plant operator may expend in obtaining it for his use

EFFICIENCY in the subscriber's telephone plays a very important part in the grade of service rendered by a telephone exchange. Even though the exchange equipment and the outside plant may be in condition to give perfect transmission, good service can never be realized unless the telephone first is able to produce voice currents in sufficient volume and clarity.

Having previously discussed the improvement and establishment of standard transmission in the outside plant and exchange equipment, we shall now set forth a transmission testing scheme for the magneto substation equipment that will be well worth the time and small cost any small plant operator may expend who puts it into use.

MOST MAGNETO telephones have about the same transmission qualities. The efficiency of these sets depends primarily upon the transmitting and receiving elements, and is, for all practical purposes, about the same in all modern telephones. Undoubtedly, however, there are yet in use many of the older types of instruments in which the efficiency is low.

It would be entirely beyond the means of the average small plant owner to make a wholesale removal of these telephones; but that does not prevent him from directing his best efforts toward the final elimination of these low efficiency instruments.

In our attempt to outline a plan by which the small telephone company may improve its plant whereby standard transmission may be established and maintained, we have covered every part of the plant, from the line jack on the switchboard to the subscriber's drop, including the cord circuit. Therefore, let's start upon our final move for perfect transmission at the pole where the subscriber's drop leaves the line. In this case we will assume that transmission has proven satisfactory on this line, but that this substation set has failed to come up to the standard.

Inspect the drop wiring and note that all tie wires are properly made and in good condition and that the drop is drawn up properly. If the drop wire is not in good condition, it will be best to replace it. When not clear of trees, suitable clearance should be provided, with the property owner's consent. See that the drop connections are well-soldered to the line wire, or if connectors are used, be sure they are clean and tight and without any chance of becoming loose and introducing excess resistance or cut-outs.

Examine all connections on the arrester to be sure they are clean and tight. Inspect the carbons and micas; note that the micas are installed with the slot down and the top edge slightly raised above the carbons to prevent the accumulation of dust, causing a leak to ground. Be certain that the carbon surfaces are clean and smooth. Replace all micas that show any injury whatever. Be sure all fuses fit tightly in their holders and that all connections are tight and clean.

EXPERIENCE has taught that in the telephone set lies the most frequent cause of unsatisfactory transmission. Among the most frequent causes are: Worn out batteries, noisy cords, defective or wrong types of transmitters or receivers. Noisy, low-volume and poor-quality transmitters and frozen or otherwise defective receivers with dented diaphragms and loose caps should be carefully looked for, as they are frequent causes of transmission impairment when other parts of the equipment are in good condition.

The switchhook contacts should

be given special attention and so adjusted that they have a good follow. They should be cleaned with a small burnishing tool. A dirty, poorly-adjusted switchhook will cause a noisy cutout when jarred, or introduce excess resistance in the circuit, thereby adversely affecting transmission.

Defective cords are frequently the cause of poor transmission. A good way to test not only the cords but the entire wiring of the instrument is to connect the output of the tone test described in a previous article of this series (TELEPHONY of January 18) to the line posts of the telephone. While listening to this tone, jar the telephone and twist the cords and any loose connection will be brought to light by the breaking or diminishing of the tone.

IN MAGNETO exchanges the maintenance of dry cells is an important factor in good transmission. No two subscribers use their telephones the same amount in a given time and, therefore, the amount of drain on these batteries differs in each installation. For this reason, unless it is known that the batteries have been recently installed, it is best to replace them before the test to insure an adequate battery supply.

In the writer's own experience he has found it best to call the operator at about this point, stating his location and advising that he is preparing for a transmission test, after which he hangs up the receiver and proceeds with his inspection.

By previous agreement and understanding this is the operator's notification to remain on the line or return to it shortly, giving anyone who may have removed his receiver in response to your ring an opportunity to replace it and thus giving you a clear line for testing; otherwise you may find your test misleading because others have their receivers bridged across the line. The operator can prevent the possibility of forgetting your signal if she will at once put the line up for test.

When you are ready for the test, return to the line. If the operator has not returned, you can only wait until she does. When she comes on the line, have her talk through the 20-decibel network and note both the volume and clearness. If both parties hear clearly and distinctly, the station is passing the 20-decibel test, but should either party not hear distinctly and with reasonable clearness, either the transmitter or receiver is failing, as the case may be.

We know, to begin with, that the operator's talking equipment is furnishing standard transmission; therefore, if she is unable to hear you distinctly your transmitter is failing to meet the test and should be corrected. If she hears you easily and distinctly but you do not hear her, then the receiver under test has failed. The usual method of correcting these faults is to replace the defective part and repeat the test until the cause has been located and removed.

THIS same test may be made without the cooperation of the operator by the use of the portable testing set (TELEPHONY of January 18). The test is made in the following manner: Disconnect the drop wire from the line, or if the drop is a long one, disconnect the telephone from the drop by removing the fuses in the protector. Connect the tone test through the network to the wire leading to the telephone.

After setting up the proper amount of loss in the network, return to the telephone and listen to the tone which comes to you through the network. If the tone is heard distinctly and clearly, the receiving qualities are satisfactory.

To make a test of the transmission qualities, reverse the positions of the tone test and the measuring set. Connect the output of the tone test to a standard receiver which is so arranged with a hook that it can be hung against the mouthpiece of the transmitter on the telephone set. Start the tone test.

Going outside of the house, connect the drop wires to the telephone to the binding posts of the measuring set. Plug the head receiver with the testing set into jack No. 4 (Fig. 5, TELEPHONY of January 18) and listen to the tone. Its volume and clarity should now inform you whether or not the transmission qualities of the instrument are sufficient.

WHILE BOTH these tests have proved themselves to be satisfactory, I personally prefer the following, which makes use of two parties at the telephone to be tested: When two parties work together the inspection can be made much more quickly by each party having a certain part of the inspection to do, and the chance of error in the test is reduced.

For this test a regular telephone set, less ringer and generator, may be wired in a small portable case. One of the inspectors connects this set to the house wiring while the other sets up the transmission network in the portable testing set and connects the telephone to the binding posts of this set.

After setting up the proper amount of loss in the network, conversation between the two parties soon establishes the transmission qualities of the telephone under test. Of course, the two parties making this test should be unable to hear each other, except through the telephone connection they have set up. If they are able otherwise to hear each other, the value of the test will be greatly reduced.

Should the transmission of the set fail to come up to standard after both transmitter and receiver have been replaced by those known to be satisfactory by previous tests, the telephone set should be replaced. When the set presents an unsightly appearance it is usually best to replace it with one in good condition.

I have never been in favor of the repairman making extensive repairs on the premises of the subscriber. If it becomes necessary to replace a condenser, induction coil, or any part of the instrument requiring the use of a soldering iron, it is best from the standpoint of service and good workmanship that the telephone set be replaced and returned to the shop for a general overhauling.

ANY INSTRUMENT returned to the shop, no matter for what reason, should be thoroughly inspected and tested before being returned to service. Transmission should be definitely determined as satisfactory by meeting a more severe test than is usually applied in the subscriber's home.

Quite elaborate testing arrangements may be set up in the shop for this purpose; but if the portable testing set described in a previous article of this series has been provided, it will supply all the tests necessary to establish a transmission efficiency equal to a 30-decibel loss, which will seldom be encountered in the small plant.

Shop transmission tests on complete subscriber telephones, as well as on transmitters and receivers, are necessary to insure that the equipment is suitable for placing back in service. When once removed from service, no piece of apparatus should be returned to service until thorough transmission tests prove it suitable for service. Even new apparatus should be given a thor-

ough test for transmission qualities to insure that the purchaser is getting the most for his money.

Tests on these various pieces of equipment may be made by interchanging them with those on a set known to meet all transmission requirements. Any change in the qualities of transmission will indicate differences in equipment efficiency.

THE SMALL plant operator wishing to maintain a high grade of transmission should carefully guard against connecting too many subscribers on one line. Every 1,600-ohm ringer bridged across the line adds about one-half decibel loss to the line, in addition to its actual length. Even on moderately-loaded lines, where in response to ringing of their bells subscribers take down their receivers to listen, transmission may be reduced to such an extent as to render conversation unsatisfactory.

Many small telephone companies have installed small capacity condensers in the receiver circuit of their telephone sets in order to overcome the ill effect of too many receivers across the line. It is true that such a condenser makes it easier to ring through when many receivers are across the line, but there can be no improvement whatever in the transmission because of the installation of this arrangement.

The problem of maintaining good transmission in the small telephone exchange has presented one of the most difficult problems to be met in the telephone industry. This is because it is not only a technical but an economical problem. Many small telephone plant operators feel that the expending of great sums of money is necessary to obtain and maintain good transmission. This is far from the case.

Experience has definitely proven that the greatest single factor in maintaining good transmission, once it has been obtained, is a matter of making periodical tests such as have been outlined in this series of articles. Nothing has been mentioned indicating the necessity of complete rebuilding of the plant, or the expending of large sums of money in any manner. The method outlined has been one of constant searching for the offending parts of the plant and, when once found, of correcting them.

TESTS and periodical inspections of outside plant, subscriber and central office equipment will be found to prove quite beneficial. The local troubleman in the average exchange will have many slack periods which can be utilized to good advantage in making these tests and inspections, and they will pay a high rate of interest on any time or expense incurred in the improvement of the service.

Actual studies made on small magneto plants have shown that over two-thirds of all troubles found could have been detected and cleared with the regular day-to-day routine inspections made by the repairman, less than one-third requiring the use of transmission measuring sets.

We have often heard it said that the telephone was a monopoly. Maybe it was one day, but nothing could be farther from the truth today.

It is a well-known fact that more efficient methods are being introduced by the post office department; air mail is being used extensively. The telegraph companies are not asleep. The radio and the automobile have become a serious competitor for the communication dollar. We used to be satisfied with the "horse and buggy" as a means of transportation, but today it takes a motor car to fill the bill.

Something of this same thing is taking place in the telephone transmission field. We have not stood still either, and the small telephone plant operator who expects his public to be satisfied with the grade of transmission provided when "he was a little shaver" is going to find his company rather unpopular in the community. Yesterday's conditions and requirements are not those of today and tomorrow.

A telephone subscriber will usually excuse almost any irregularity, even to interruption of his service, but many years of experience in dealing with the telephone-using public has taught some of us that the subscriber will, as a rule, consider any poor transmission to which he may be subjected as reason to condemn the entire system.

HAPPY MEDIUM

By MISS ANNE BARNES

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

THERE is a happy medium between being over-cautious and under-cautious, but most of us are groping around on the outside. I wonder why? Perhaps it is because we fear the opinions of others.

The over-cautious person does not accomplish as much as he should because he restrains himself from taking immediate action when necessity often requires it. Sometimes he would rather not make any move than a wrong one. He allows himself to be hampered by what others may be thinking of him. A miserable feeling! We all experience it until we are able to *work* our way into the happy medium.

I have been told that the over-cautious driver is often not much safer to meet on a road than an under-cautious one. You cannot count on the outcome of the first as well as you can of the latter, for you know what to expect of the under-cautious driver and can act at once for self-preservation.

The under-cautious person is not dependable because he speaks before he thinks, leaps before he looks, and so we soon learn not to place much credence in what he says or does without "double-checking" him.

How we all admire the happy-medium folks. They seem to know what to say or do, when and where. We wonder why we cannot be like them. They do not appear to be the least perturbed about what they say or do, for it is usually the right thing. They have developed the admirable quality of tact and learned how to get along with people. They do not seem to be bothered by the thought, "I wonder what Jones is thinking?"

Happy-medium folks impress us because they make a practice of doing and saying *carefully* and *well* whatever they attempt and thus exempt themselves from *fear*.

These happy-medium persons are cautious in crediting the sayings and doings of others; are reserved in their spoken opinions; do not reveal themselves indiscriminately to the other person.

Moral: "Give every man thine ear but few thy voice."

IN THE NATION'S CAPITAL

By FRANCIS X. WELCH,
Special Washington Correspondent for TELEPHONY

IT WAS back in 1913 that Chief Justice Hughes—then an associate justice of the United States Supreme Court—wrote that landmark decision, Simpson v. Shepard, more generally known as the Minnesota Rate Cases. It was in this opinion, which occupies 121 pages of the U. S. Reports (Vol. 230), that the court took the position that the Federal power over interstate commerce is supreme, even though it incidentally extends to intrastate commerce.

To use the words of Justice Hughes' opinion: "If the situation has become such, by reason of interblending of the interstate and intrastate operations of interstate carriers, that adequate regulation of their interstate rates cannot be maintained without imposing requirements with respect to their intrastate rates which substantially affect the former, it is for Congress to determine . . . the measure of regulation it should supply."

THE DECISION, of course, applied only to railroad carriers then, as now, a utility service of predominantly interstate character. A year after the Minnesota Rate Cases, the United States Supreme Court decided the Shreveport Rate Cases, in which it concretely clinched this constitutional position that the Federal government has jurisdiction, not only over interstate commerce, but even intrastate commerce to the extent that it affects interstate commerce.

To use an example, let us take the Pennsylvania Railroad operating through Virginia, District of Columbia and Maryland. Obviously the control over the passenger fare between Washington, D. C., and Baltimore, Md., would be an interstate matter—a Federal job. Suppose that rate were fixed at $1.00.

Now take the fare between Baltimore, Md., and Laurel, Md. (which is halfway between Washington and Baltimore)—evidently an intrastate matter for the Maryland commission. Suppose, however, that the Maryland board fixed that rate at 30 cents instead of 50 cents. Clearly the intrastate traffic would proportionately not be as profitable as the interstate traffic.

In other words, the interstate business would bear an unfair proportion of the company's operating costs; or, as the court would say, a "burden on interstate commerce." Under such circumstances, the Federal commission has the authority to set aside the 30-cent rate fixed by the Maryland board and direct that the fares be adjusted more evenly.

Such was the import of the Shreveport Rate Cases, and such has been the consistent position of the United States Supreme Court in every railroad case involving Federal-state conflict that has since come before it. The court has gone to great lengths to sustain this Federal authority over our national transportation system.

Only last May, Chief Justice Hughes stated in an opinion: "As their (railroads) service is vital to the nation, nothing which has a real or substantial relation to the suitable maintenance of that service, or to the discharge of the responsibilities which inhere in it can be regarded as beyond the power of (Federal) regulation."

Only last week the court set aside a state tax which it found unfairly burdened an interstate railroad operating through North Dakota.

IT IS EASY to understand why, in view of this strong position of the United States Supreme Court on Federal regulatory supremacy, state regulation of railroads has shriveled to a mere shadow. Today state commissions can do little more than supervise the maintenance of local stations and local service.

It is easy also to understand why the state commissions—fearful that the same centralization of regulatory power would occur in other utility fields—insisted, with fair success, that Congress insert in the Federal Communications Act and the Federal Motor Carrier Act, respectively, language expressly preventing Federal commissions from taking jurisdiction over intrastate matters, merely because they might "affect interstate commerce."

But will this restriction stand up? Are the state commissions too optimistic, in view of the past record of the Federal government for always attempting to increase its jurisdiction? What is to prevent Congress at a later date from removing the anti-Shreveport language from the Communications Act?

But suppose Congress were to make such an amendment? Would the United States Supreme Court go as far with telephone regulation as it has with railroads? What is the evidence on the other side?

THE ANSWER is the famous Schechter case which killed the Blue Eagle. It will be recalled that the NRA tried to extend the Shreveport principle to Federal regulation of local commerce (such as the poultry business) on grounds that it affected interstate commerce. The court (again, mind you, speaking through Chief Justice Hughes) refused to follow.

"If the commerce clause," said Justice Hughes, "were construed to reach all enterprises and transactions which could be said to have an indirect effect upon interstate commerce, the Federal authority would embrace practically all the activities of the people, and the authority of the state over its domestic concerns would exist only by sufferance of the government."

Only too true, as evidenced by the hollow-shell remains of state regulation of railroads. Here then is a clean-cut distinction. The railroads apparently are in a class by themselves (or, as the lawyers say, "*sui generis*"). The court apparently believes that the transportation system is a matter of national concern in which interstate and intrastate operations are so inextricably interblended that Federal regulation of the whole is necessary.

Will the court take the same view of the communications system of the country that it does of the nation's transportation system, if that question is ever presented to it? Or will it classify local telephone business with local poultry business?

That question does not press for consideration today. Perhaps some who read this will think this writer is borrowing trouble. It is true that as long as the Federal Communications Act stays as it is, no such question will ever reach the court. But what Congress can create, Congress can change and very often has. The long-range importance of this fundamental constitutional question compels the thoughtful consideration of serious-minded telephone executives as well as state regulators.

AND WHY bring the subject up now? Well, that is where all this discussion leads: the case of State of Nebraska v. Northwestern Bell Telephone Co. which was argued on February 6 in the United States Supreme Court. The opinion in that case may very well determine just which way the wind blows for future regulation of the telephone industry.

The principal issues in the case were, of course, quite different. The Nebraska State Railroad Commission fixed a composite depreciation rate of 3½ per cent on the Northwestern Bell properties in that state and ordered the company to keep books accordingly. The state supreme court sustained this action.

The company appealed to the highest court, claiming that: (1) It had insufficient notice; (2) the Federal government has occupied the field of accounting by interstate telephone utilities; (3) the Nebraska order was in conflict with the old ICC accounting order; and (4) the amount fixed was arbitrary and inadequate.

Although C. M. Bracelen, A. T. & T. general counsel, spent considerable time with the first point, the court indicated some impatience with the company's position. Again, it was Chief Justice Hughes who did most of the questioning. The fourth point was scarcely considered at all.

It, therefore, seems likely, to your observer, that the court will decide this case on the question of whether, in the absence of Federal action, a state commission can require an interstate telephone company to keep separate accounts for purposes of state regulation.

In so deciding, it may throw light on a fundamental matter far more important than the depreciation accounting involved in this particular Nebraska case. It may indicate whether the court will permit the states to retain fundamental regulatory authority over intrastate operations by interstate communication agencies regardless of what Congress may enact.

John E. Benton, counsel for the National Association of Railroad & Utilities Commissioners, appearing on behalf of the state of Nebraska, put the whole matter in a nutshell when he asked the court: "Will this state be denied the right to regulate the affairs of these vital agencies of public service, by requiring the maintenance of a separate accounting system for purposes of state regulation that could be installed for perhaps a half a clerk's hire?"

Needless to say, this question was received by the entire membership of the court with wide-eyed attention. The court will answer in about three or four weeks, and on that answer the entire future of communication regulation may possibly be forecast.

The Operators' Corner

By MRS. MAYME WORKMAN

Traffic Supervisor, The Illinois Telephone Association, Springfield, Ill.

OUTLINE of method and proper procedure in handling "All Trunks Busy" and "NC" call orders. Series No. 229

WHEN an operator attempts to reach the terminating toll center on a built-up circuit call she may receive a report from the intermediate operator that the desired circuit is not available.

If an NC condition is encountered on the first route at a time when the operator has not previously tried the alternate route and a circuit is immediately available on the alternate route, the operator will not leave a call order but will say, "Right," clear the toll circuit, and try the alternate route. If an operator encounters NC on the first route under any other condition she will leave a call order, saying, "Call operator (number of proper point-to-point position) at (name of your office) (precedence)."

If an operator encounters NC on an alternate route, she will not leave a call order but will say "Right," clear the circuit, and try the first route as soon as a circuit becomes available, in the meantime trying to alternate route at intervals of three minutes.

In a high percentage of cases when an operator leaves a call order the intermediate operator will say, "Hold this circuit." When she makes this request she expects to be able to complete the through switch within five minutes. The OTC operator will acknowledge her request by saying "Right," and if the calling party is holding the line she will tell him she is sorry the circuits are busy, adding, "I will call you." If, however, the calling party is not holding the line she will not give him the NC report at this time.

If at the end of the time allowance for holding the toll circuit the intermediate operator reports, "NC. Clear this circuit," say, "Right," clear the toll circuit, reach the calling party and pass the NC report. Release the calling line and send the ticket to the proper point-to-point position.

In connecting to a place reached over ringdown trunks if the TTC operator says, "All trunks busy," understand that the ringdown trunks from the TTC to the called place or terminating ringdown office are busy. Leave a call order, saying, "Call operator (number of proper point-to-point position) at (name of your office) (called place) (called number) or (address name), all trunks busy. I will hold this circuit." The procedure thereafter is the same as for a report of BY from a built-up circuit point except that you give reports of NC instead of BY.

The phrase for an "All trunks busy" is a rather lengthy one; therefore the chief operator should occasionally post this phrase on her bulletin board so that her operators may review it.

Questions from Illinois Operators

1. What is the difference between an "NC" report and an "All trunks busy"? When should they be used?
2. In small exchanges where subscribers are to keep their telephones up, what should an operator do if the subscriber refuses to pay for a long distance call unless they can hear the called party clearly?
3. If for some reason you wish the Information operator at some distant point and so pass your order, should an Inward operator challenge by asking "What address name?"
4. How many reports are entered on the face of the ticket?
5. What is the correct phrase to use when leaving an "All trunks busy" call order?

The answers to these traffic questions are given on page 33.

Here, There and Everywhere

Telephone Service in North Dakota as Early as 1877

A recent story in North Dakota newspapers, written by Win V. Working, and a clipping of which was received by TELEPHONY from J. I. Shepard, plant manager of the Shepard Telephone Co., Walhalla, N. D., makes the interesting revelation that as early as 1877 the Grandin farms, near Caledonia, N. D., were equipped with telephone service.

Fred Goodman, of Grand Forks, Traill county pioneer, is the source of information for this interesting bit of history. He states that the three Grandin brothers were among the earliest bonanza farmers in the county. They were wealthy oil men from Tideoute, Pa. The eastern home of the Grandins was not far from Philadelphia where Alexander Graham Bell first exhibited the telephone in 1876 and they, no doubt, received first-hand information regarding the new invention.

Mr. Goodman said that there is positive proof they installed a telephone system on their farms in 1877. Although he personally never witnessed the Grandin telephone system, he had conversed with scores of people in the 80's who had seen it and to a few who had talked over it. He stated further that, although Traill county's claim to the state's first telephone system was announced many years ago, none has disputed it. Bud Reeve, pioneer of Buxton, was another early patron of the telephone, having installed a telephone system in his elevators at Buxton and Reynolds in the early 80's. Dr. J. Grassick recalls talking over that system in 1885.

Cold? Even Telephones Freeze in Minnesota!

The cold weather of recent weeks has been described by various writers, discussed by old-timers, and cussed by nearly everyone; but perhaps the best description is the one, "it was so cold that the telephones froze." And such was the case in Blue Earth, Minn.

On a recent Monday two farmers brought to the office of the Blue Earth Valley Telephone Co. telephone instruments for repair, stating that they would not ring out on the line.

As the instruments were in perfect condition, President W. A. Eckles could only suggest that the ground rods on which the telephones depend for their operation had "frozen out," as the local telephone men call it. In other words, the intense cold of the past month had followed down the rods and frozen all the moist earth surrounding the rods so that they no longer made electrical contact with the earth.

President Eckles suggested to the farmers that they should ground their telephones in the basement, to a pump or a water pipe; or they might tie a stone to a piece of wire and throw it in the cistern or in the well, and use that for a ground.

New Edition Reproduces Early Telephone Directory

The latest edition of the Grand Island, Neb., telephone directory issued by the Northwestern Bell Telephone Co. contains a reproduction of the first telephone directory ever issued for that city. This was in 1884, and contained just 65 subscribers. The whole list was printed on a single card. To get either Central or the party being called, the user had to do his own ringing—one ring for the subscriber, except where otherwise indicated, and two for Central.

There were five telephones in the courthouse. To get the county clerk,

Effective and Timely Advertising Copy

Blizzards and Cold»»
Trains Running Hours Late»»
Busses and Trucks Stalled»»
Farmers and School Children Unable to Get Home»»

But--Your Telephone Service Still Went On

We have maintained Service on 43 Rural farm lines in this Community during all this bad weather with very low service interruptions

What is the value of your Telephone when all other routes of Communication are closed?

For a cost of less than 5 cents a day you can have this same service installed in your home

United Telephone COMPANY

TELEPHONE 80 or 167

The Time Is Most Opportune for Reminding the Public of the Convenience and Dependability of Telephone Service. Roads May Be Impassable for Motor Traffic, Street Car and Railroad Transportation Hampered and Delayed but the "Telephone Highways" Are Wide Open. To the Left Is Reproduced the Effective Advertising Copy Used Last Week by C. O. Westby, Manager of the United Telephone Co., West Concord, Minn.

The Time Is Also Ripe for Selling Telephone Service, Particularly to Ex-Service Men Whose Financial Resources Are Soon to Be Augmented by Payment of the Bonus to Veterans of the World War. Miles Vopatek, Manager of the New Prague Telephone Co., New Prague, Minn., Had Published in a Local Newspaper the Other Advertisement Reproduced on This Page, Reminding the Public That "You Can't Afford to Be Without a Telephone" and Informing Prospective Suscribers That There Will Be No Installation Charge If Three Months' Rental Is Paid In Advance.

The Publication of These Advertisements Not Only Indicates the Appreciation by the Managers of These Companies of the Value of Publicity But Their Alertness to the Opportunity for Getting a Certain Message Across to the Public at the Most Appropriate Time.

We Pay A Bonus

In (SERVICE)

We are not talking about the Soldiers' Bonus, altho that's quite a topic of conversation at this time. We refer to the bonus of hours, days, months and years of TIME SAVED by the use of the TELEPHONE.

Your compensation will be paid in June. Our compensation which amounts to a few cents daily is not very much, but we are very happy that every day we are in a position to be of service to mankind—Just as our Veterans were. At this time we have a special message to our Soldiers, Sailors and Marines—why not have a telephone installed in your home at once so every member of your family may enjoy the comforts of telephone service. What else could you possibly buy that costs so little and serves so well and dependably?

"You Can't Afford To Be Without A Telephone"

Your Home Needs It! *You need it!* Your Business Needs It!

New Prague Telephone Co.

Free Installation -
Telephone Installed FREE If Paid Three Months In Advance.

one ring was indicated; for the county judge, three rings; for the treasurer, four; and the sheriff, five. A footnote on the card warned subscribers never to answer on two rings—which was the signal for the operator—and never to attempt to use the telephone during a thunderstorm.

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Useful Ideas: Aid in Use of Thread Gauge

Lighting conditions—often where there is plenty of light for general purposes—are sometimes not satisfactory when using the thread gauge over the finer threads. At such times a flat white background is of considerable help.

In order to have such a background convenient for ready use, take a piece of common white adhesive tape, as shown in the accompanying illustration, and stick it to any handy spot on the work-bench. Rub the cloth or upper side with white chalk, if a little dark.

With a Gleaming White Background, Afforded by Sticking Piece of White Adhesive to a Spot on the Work-Bench (and Kept White by Rubbing It With Chalk Occasionally) the Light Will Be Much Improved For Using Thread Gauge.

It will be found that this white background enables one—even in a poor light—to note the fit of the gauge tool teeth into those of the screw or other part under examination.

The tape may be quickly removed if necessary and may be applied to almost any kind of a surface.

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Telephone Company Wins Prize in Safety Parade

By DONALD F. KINNEY

Among those entering attractive, as well as instructive, motorized floats in a recent safety parade, staged by the Denver Junior Chamber of Commerce, was the Mountain States Telephone & Telegraph Co., of Denver, Colo. The accompanying photograph shows the company's entry, which was awarded first prize as the most attractive float in the commercial division.

Five employes were used on the float, two of them being "victims" of an accident, and the others, "first-aid-givers." Along the two sides of the truck, completely covered with attractive paper decorations, was a sign reading—"Our Employees Are Trained To Drive Safely," while on the back was a smaller sign reading — "Our Employees Are Trained To Give First-Aid."

Float Entered in Recent Safety Parade at Denver, Colo., by the Mountain States Telephone & Telegraph Co., Which Was Awarded First Prize as Most Attractive Float in the Commercial Division.

More than 50 floats in all, each depicting a lesson in safety or showing the results of careless driving or defective equipment, were included in the parade. It was the initial effort in a year-round campaign designed to reduce accident fatalities in the city. The line of march extended through the business district and past a reviewing stand where judges selected the winners.

The group staging the parade, mindful of the number killed each year in automobile accidents, encouraged "scare" floats, and in the parade were views of wrecks, twisted and torn automobiles, hospital and graveyard scenes, as well as ambulances and hearses.

Extensive publicity was given the parade, bringing it to the attention of hundreds of thousands of residents. For a week following the event, the city went without a serious automobile accident. It is planned to stage something sensational each month for safety, and the telephone company has signified its intention of cooperating fully.

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Sub-Zero Weather Increased Toll Usage

Sub-zero weather during the past three weeks in Ohio has had varied effects on telephone operation in the state with the Independent companies and the Ohio Bell Telephone Co. Rapid contraction of the copper wire, resulting from the quick change in temperature, caused strands to snap in many localities, disrupting service in those sections.

Such conditions are reported to have been particularly noticeable in the territory adjacent to the Ohio River and, because of the heavy snowdrifts at many points, difficulty was experienced by linemen in making the necessary repairs.

Although this type of weather had its destructive effects, it also had a stimulating effect on long distance business. Travel was halted to a marked degree and the telephone was resorted to as a substitute.

The Columbus exchange of the Ohio Bell, which on a normal day handles around 4600 long distance messages, saw this number increased to 6250 calls at the peak and it was necessary to call in extra operators to assist in handling the increased load.

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"Extry Special" From Emily Schrooch

Armchair, Ozarkiana.
February 1, 1936.

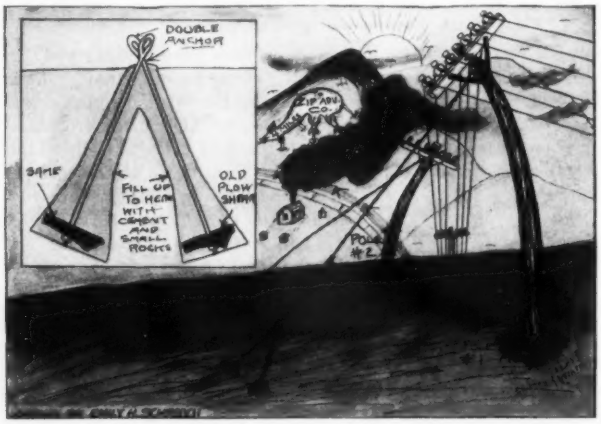
Dear Mr. TELEPHONY:

King Solomon said that there is nothing new under the sun but that's all a mistake for if he'da been with me this morning that statement would never been printed. I went, real early, to the top of Hash Mountain to see the sun rise and to look at Beacon's new "ZIP" advertising sign which he has just put up. Beacon (that's my son) of course, had to tag along to see how I was going to reactionize in regard to some other work that he has been doing up there for the Western Onion Telegraph Co., who have a six-wire lead running over the hill.

About the time that the sun was up good, Ras Teeter, the Rocking Prairie school house janitor started a big coal fire in the new stove just to try it out

and when the smoke began to roll up and over the valley fog, crows and the rest of the beautiful Ozarkiana cenery then it was that I just had to set down and draw you a picture of it. It may not show up so well after your elecktrograffer gets through with it, but it sure does look good now, don't it?

I am sure proud of my son, Beacon, and he wants me to call your attention to a set-in drawing in the upper left-hand corner of this pickture. This is what we call down here a double plow-shear telegraph anchor. Beacon learned it off of an old lineman in this areea years ago. I don't suppose that it is a new thing to a lot of your veterans but



Picture Shdws Six-Wire Lead Constructed by Beacon Schrooch and Anchored with Home-Made Plow-Share Anchors.

I'll bet you a nickel that there's thousands of embryos that never heard tell of one like this.

You will notice that two anchor rods pulling at a tangent (Beacon dictating now) will keep anything from moving ahead and upward just the same as will two tellafone employes (fixture rods) keep things from moving along when they are pulling at a tangent while supposed to be working for any big tellafone company. (Such folks ought to be called the "double anchor" type because they are so effective in their tangeneuity. They are always eccentrick in their make-up which means of course, just a little off-center.)

Now back to the anchor in the drawing; notice that the plow shears are covered with dried cement and rocks; three parts sand and one part cement and enough water to make the mix a little runney. If your rocks are a little pourous, then soak 'em in water before putting 'em in the hole or else they will draw their water out of the cement mix and make it weak—please don't forget that. Don't tamp the dirt in for three days and then "give it the devil," as Ed used to say.

You can now put your two pair of double blocks and falls on and put as much rake or crook in the pole as you please, or you can even break the pole off if it don't suit you. If the soil is sandy, use a post digger; if it is a little rocky, then use a spud and follow with the post digger. In eyether case, sinker deep.

Please notice that pole No. 1—which was as crooked as a dog's hind leg, due to being hooked to a worthless anchor rod for seven or eight years trying to double for the anchor—has been turned around and the acquired crook now becomes very useful. Pole No. 2 will also be turned around some day and put back into the line like No. 1. In an obtuce angle job like this, always tie-in the line wires before raking the pole or you'll have a heck of a time riding it afterwards. Ask any old lineman how easy it is to get a tight line into the insulator groove on a sharp drop corner. Now I'll stop and go into second gear to the end of the letter.

The spot where you see pole No. 1 is a part of a farm which my husband, Mr. Schrooch, has for sale and if you see anybody up your way that is thinking of migrating into the "back-to-the-farm movement," Ed will be glad to split his commission with you. This farm has a wonderful set of wild duck buyoos on it emptying into a sparkling little rivulet which wanders laughingly away through the rest of the farm, diagonally and decidedly downward. If its cenery your customer wants then this farm can't be equaled any where. Potatoes will grow on it in abundance by just moving the understone aside sufficient for them to develope during the growing season.

The price is five dollars down, plus commission for the agent and five dollars a month thereinafter. There's a cracking good well on the farm and an extry fine foundation to build a house on. The former owner decided he'd save his money and went to California to live with his aunt; for that reason he is selling so reasonable. You can't go wrong on price here. Mountain loam has great possibilities if the customer don't weaken before my husband gets him back to town.

"Meely" Earhorn, our chief night switch wants to know what one of them "stand - on - your - head - while - you-talk" transmitters would cost; she is thinking some of having one installed on her night trundle bed which she leads up to the switchboard each night when she retires between the cock-crowing hours of 11:59 p. m. and 3:13 a. m. She says it would save her a lot of stretching-up to reach the regular switchboard transmitter while she is answering a night call. By having the new transmitter under her pillow she wouldn't have to uncover but one arm at a time while operating.

Yours very effectively,
GUMVILLE TEL. & TEL. CO.,
Per Emily H. Schrooch, Gen. Mgr.

Note from the private diary of C. Edw. Schrooch: "Teaching a talkative tellafone operator to use fewer words while innunciating is often harder than training a full-grown tarantuler how to pick a banjo."

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Telephone Again Saves Property from Fire Loss

Penn Love, manager of the Farmers Telephone Co., of Milan, Mo., recently informed the United States Independent Telephone Association of an instance in which the presence of two telephones resulted in checking a fire which in all probabilities would have resulted in considerable damage—if not the destruction of the entire house.

A farmer, noticing that the roof of his neighbor's house was burning, telephoned the night operator. She quickly plugged in on the neighbor's telephone, informing him (to his surprise) that his house was on fire. Then she notified the fire department and nearby neighbors. The result was that the "bucket brigade" succeeded in putting out the fire.

Mr. Love's letter to the National association reads as follows:

"We desire to report on a fire that was telephone handled. At 6 a. m. a neighbor of Frank Railing noticed that the roof of his house was on fire. The neighbor reported to the night telephone operator who, in turn, called Mr. Railing and told him that his house was on fire, which he had not discovered.

The operator notified the fire department and also nearby neighbors and the fire was extinguished by Mr. Railing and the neighbors with his "bucket brigade" before much damage was done.

They say that well-known fire chiefs say that it is the first two minutes that count, which was used to advantage in this case. If the neighbor and Mr. Railing had not had a telephone no doubt that at this time of the day with a snowstorm in the air the entire roof would have been consumed, and probably the house, before assistance could have been summoned. This is a house valued at $4,000 perhaps."

The Government's Rural Electrification Program

By R. R. HERRMANN
Northern States Power Co., Minneapolis, Minn.

STATUS OF RURAL electrification in Minnesota under plans of the REA. Only one rural project has secured government loan. Plans and requirements of REA for promoting electrical development of rural territory. Some points telephone companies should bear in mind. Excerpts from address before recent convention of Minnesota Telephone Association

WHEN private companies started to be active in the construction of rural electric lines some 10 or 15 years ago, there arose the question as to the respective rights of telephone and electric light companies' lines along highways, and the respective obligations of each in connection with interference. After a more or less extended period of negotiations, the electric utilities and larger telephone companies finally arrived at a working agreement.

At the present time, I believe, and for a number of years past, there has been little or no controversy of importance between any of the larger telephone companies and any privately-owned and operated electric system, as to highway rights, interference obligations, and expenses connected with elimination of such interference.

The prospect of your companies having to face this question anew and having to effect a working agreement to settle these controversies all over again from the beginning with a miscellaneous group of independent cooperative organizations (formed under the provisions of the Rural Electrification Act) is, therefore, something to give you concern.

With private utilities you are dealing with an organization which can be sued. Laws can be passed to lay down the rules of responsibility and equity. Of course, a cooperative can likewise be sued and laws passed, but under present conditions can as equitable solution be reached in as easy a manner.

Because these rural electric service cooperatives will undoubtedly be independent of each other, the prospects of reaching a working agreement with all as one organization may be remote. It rather appears that each project would probably require an independent arrangement and then would only cover the particular source of trouble involved, so that it would really never be anything of a permanent nature.

From time to time since last June, when this program was first announced, we have thought we understood it and what could be expected from it. Upon each such occasion, however, we have encountered pronouncements of new policies, generally more or less in conflict with our previous understandings, and up to the present time we are still more or less in the dark as to what the present program will amount to and in what form it will be carried out, if at all, to any considerable extent.

Purpose of the REA

The Rural Electrification Act, as you are doubtless aware, was passed by Congress some time ago. The purpose, I suppose, was to bring electric service within reach of every farmer and, at the same time, help to relieve the unemployment situation. To that end machinery was set up and $100,000,000 were allocated to the project. The job was turned over to Morris Lewellyn Cooke, of Philadelphia, Pa.

Early last summer, or rather late in ths spring, Mr. Cooke called conferences of private utility representatives and also of municipal utility men. At that time Mr. Cooke outlined a program which, briefly, was this: Money was to be lent to private utilities, municipal utilities, and cooperatives alike without favoring any group, at a low rate of interest, for the construction of power lines in rural districts.

In order to secure such loans, rates for service to the farmer must be satisfactory to the government. Since the cost of construction is an important element in the cost of rendering service, no "battleship construction" would be allowed. Construction must be cheapened. There was to be no further experimentation but, instead, action.

Apparently no recognition of such excess costs as might result from moving telephone lines from one side of the highway to the other would be permitted. The fact that the construction standards of private companies were determined, perhaps, by taking into consideration climatic conditions, the general terrain of the country through which the line was to travel, river crossings, railroad crossings, and minimizing of telephone interference, seemed to be left out of consideration.

Probably most of you have had occasion to attend one or more of the meetings of farmers which have been held throughout the state to listen to representatives of the Administration's program describe it to groups of farmers and urge them to develop a cooperative rural electrification project. A rather complete canvass has been made by our State Planning Commission and contemplated rural projects have been laid out on paper.

In addition to the enthusiastic organizers giving out information as to rates for service, the REA headquarters have given the farmers the idea that a price of $3 to $4 per month for 50 kilowatthours would be more than sufficient to take care of all costs of bringing electric service to the farm.

No distinction was made between districts where the number of customers will be less than two per mile and those having several times this number. You telephone men probably know better than any one else how many farmers per mile of line one may expect in Minnesota.

In spite of all this, up to now no rural project has been completed in Minnesota. One of the very first projects which got under way in the most enthusiastic manner at the very beginning —namely, the Meeker County Project— I notice in last Sunday's papers has finally secured a loan.

The reason for this delay appears to be that the farmers, in the first place, are reluctant to commit themselves to any long-term obligations for service. In the second place, when their committees get to the point of analyzing costs

—including the necessary fixed monthly payments to meet the government obligations, plus the additional expenses to operate and maintain the system, including taxes, insurance, etc., together with the purchase of electric current from some source of supply—they immediately arrive at a figure which is, in most cases, as high or higher than that at which such service is now being supplied by the nearest utility company's rural lines.

A contract between the United States Government and the Bartlet Community Light & Power Co., a cooperative—a copy of which I have—specifies that rates sufficiently high to cover all of the costs of service must be charged. Included in these costs are interest charges at 3 per cent and amortization charges to provide for repayment of loan in 20 years. The monthly payment for these last items amounts to $5.76 for each $1,000 borrowed.

Assuming three customers per mile, the cost of line and transformers will be—let us be liberal, and cheap too—$1,200. This makes about $6.90 per mile per month which will go right straight to the government. Dividing by three gives $2.30 per customer.

So it takes somewhat of a magician to figure out how a farmer will need to pay only $3.00 per month for 50 kilowatt-hours, when $2.30 of this $3.00 is turned over to the government. Who is going to pay for line maintenance, meter reading, billing, collecting and other expense?

Again, of course, it is impossible to obtain a loan until the details of the project are complete; until a responsible sponsorship has been arranged, including the advancement of a certain amount of money for preliminaries, and the necessary contracts with farmers completed. As is always the case, only a certain percentage of farmers can afford or care to go in on such a commitment, resulting in it being next to impossible to meet the requirements necessary to obtain a loan, or, on the other hand, obtain a cost per farmer which is satisfactory.

The farmers themselves appear to be the least concerned and the least wrought up about this whole program, of anyone involved in it. Without the constant agitation, propaganda, and calling of mass meetings, there would apparently be only a nominal interest in it on their part.

The facts are that the farmers are still able to add, subtract and multiply, which is all that is necessary for them to do, once they have obtained the facts and figures to be used. As a result, after they have had a little time to use their knowledge of arithmetic, they begin to realize that they are getting nothing more than they have always been able to get.

Whether the cooperatives live or die will, in the final analysis, rest upon their ability to render the service, in a satisfactory manner, at costs less than some other organization.

There were a number of cooperative lines in Minnesota which have been taken over by the power companies. I have before me figures on one rural line, customer-owned, which has been operating for about 18 years. This line is some ten miles long and serves 47 customers. Its average income for the past five years has been $1,866 per year, and its operating cost $1,840, leaving $26 as dividends on $14,000 worth of customer-owned stock.

Of the $1,840 operating cost, about $1,100 is for purchase of energy, which you might think is rather high. But even if this price were cut in two, there would still not be excessive earnings by the stockholders; in fact, they would be getting only 4.66 per cent on their money.

Another rather misleading fact is that, while there have been published from time to time the names of projects which have been granted loans, nevertheless information obtainable as to what has actually materialized causes one to wonder whether or not these projects actually have obtained a loan or whether they have been told they could obtain one under certain conditions.

The status at present is that although many loans have been applied for, few have been granted. Up to date, in this district at least, all that has been accomplished has been a detrimental effect on the sale of private farm plants, since almost every farmer hesitates to spend money for a Delco plant if there is the possibility of high-line service in the offing.

I have not attempted to go into the many requirements governing present loans, but it should be remembered that the loan of this money carries with it more or less the same requirements as all the rest of the money distributed under the so-called five-billion-dollar appropriation.

As you know, this money was appropriated primarily for creating work, which requirement alone, among many others, might prove to be an obstacle, since obviously it would be difficult to construct electric lines with relief labor, difficult to meet the government requirements as to the percentage of labor to the total cost, etc.

While it might not be of particular interest to you, there are a number of rather interesting matters that have developed out of this program. For example, all these rural electrification projects must, of course, purchase current from some source of supply, it being prohibitive in cost in most instances to consider generating such current by the building of a plant for this purpose.

As a result, government agents have attempted to stipulate rates for the purchase of such current. In most instances their projects have been adjacent to municipal plants, apparently based upon the assumption that they had something in common. However, when it came to negotiating for the purchase of current, it developed that very few municipal plants could or would sell current at anything like the rate demanded.

Many of them have now turned to private utility companies with similar demands. While, as you realize, municipal operation could hardly expect any enthusiastic support from private companies, nevertheless, we are much closer and on more friendly terms than you may think.

In Wisconsin the operators of some municipal plants went so far as to call a meeting, to which were invited representatives of private companies, to discuss this threatened diffi-

(*Please turn to page* 38)

COMING CONVENTIONS

The Texas Telephone Association, Baker Hotel, Dallas, March 10, 11 and 12.

Oklahoma Telephone Association, Oklahoma City, March 17 and 18.

Wisconsin Locally Owned Telephone Group, Park Hotel, Madison, March 24.

Wisconsin State Telephone Association, Park Hotel, Madison, March 24, 25 and 26.

Iowa Independent Telephone Association, Hotel Fort Des Moines, Des Moines, April 7, 8 and 9.

Ohio Independent Telephone Association, Deshler-Wallick Hotel, Columbus, April 22 and 23.

Indiana Telephone Association, Claypool Hotel, Indianapolis, April 29 and 30.

Kansas Telephone Association, Hotel Sunflower, Abilene, May 12 and 13.

New York State Telephone Association, Syracuse, May 20 and 21.

The Train Usually Wins

JAKE THE LINEMAN

MORNIN' buddies! When the automobile accidents for the year of 1932 were summarized an' it was discovered that 4,020 cars had collided with trains durin' the year an' that in the collisions 1,140 persons were killed and 4,710 were injured, most safety men breathed sighs of relief—as the figures for 1932 were lower than the 1931 figures for the same class of accident.

But their sighs of relief were halted in 1933 when the final tabulations showed that 4,413 cars had collided with trains durin' the year and 1,360 persons had been killed and 4,430 had been injured, for the safety men then realized that the downward trend of 1932 had been caused by the economic depression and not because of the fact that drivers were becoming better drivers.

When the results for 1934 were summarized and the reports showed that durin' the year 5,290 cars had collided with trains and that the collisions had caused the death of 1,190 and the injury of 4,770, the fact that human beings are born chance-takers and are willing to gamble on their lives, even though the odds are against them, was driven home to those men to whom accident-result figures are more than just cold figures.

The utter futility of motorists tryin' to compete with trains at railroad crossings is driven home to us daily. It's gettin' so that it's practically impossible to pick up any newspaper that does not tell the gruesome story of how some motorist lost his life at one of the nation's railroad crossings.

In my opinion, one of the best safety lessons in the world for drivers, who have the habit of crossing the tracks without stopping to make sure that it's safe to go across, would be to make every driver visit some railroad roundhouse and spend a solid hour lookin' over the black engines which pull the freight of the country.

Stephenson's Northumbrian type locomotive which was built in 1830 weighed only 13,440 pounds. A locomotive to which I gave the "once over" the other day was built in 1930 and it weighed close to 560,000 pounds, had driving wheels 60 inches in diameter and a steam pressure of 260 pounds. And, believe you me, if every motorist had seen that same locomotive, they would have soon realized that when they pitted the strength of their car against such a powerful and heavy object it would be just like stickin' a tin can under a heavy iron press and expectin' the can to hold its shape when the full power of the press struck it.

A car hasn't a ghost of a chance against one of the powerful "black beauties" of the rail. And when a car, through its driver's carelessness, hits a train there is usually left only a twisted hulk of what was once a motor vehicle and the mangled pieces of what was once a human body.

The next time any of you buddies get close to a railroad roundhouse, go over an' take a good look at the engines. A good look *now* will convince you that you don't want to *ever* have one of them bearin' down on your car; an' when you feel that way you'll soon have the habit of payin' close attention to the "STOP, LOOK AND LISTEN" signs which are standin' at every railroad crossin'.

An' now what say we take up a few signals? Everybody ready?

Belts an' safety straps require oiling about every six months. When you give your belt an' strap its regular oilin', don't use mineral oils or greases such as vaseline. Use ¼-ounce of neats-foot oil an' you'll do a much better job. Remember, while you are oilin' them up, that the leather should never look or feel greasy; that leather will stretch if it has too much oil; and that over-oiled leather has the habit of pickin' up sand and grit.

Eyes and the "Creosote Burn Wash" which is used by most companies for the treatment of creosote burns should be kept as far apart as possible. If a drop does get into the eye, always flush the eye with plenty of water. Then, by means of an eye dropper, apply two or three drops of castor oil.

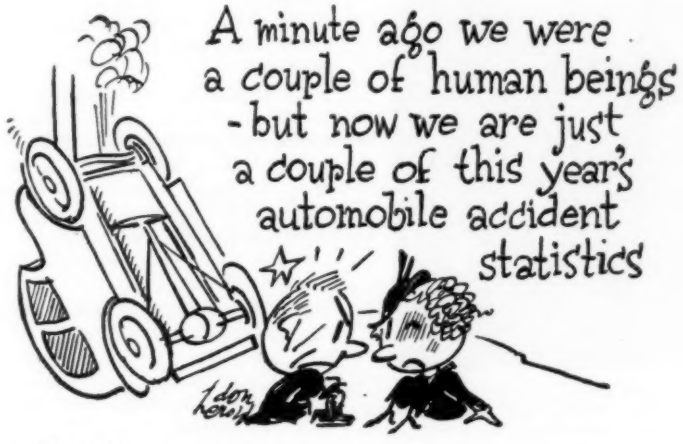
Safety tells us that all manholes, which are known to be deficient in oxygen, should be well marked; and that all employes should be taught to recognize the markings and warned that such manholes should be thoroughly ventilated before being entered.

A few recent accident reports show that accidents are being caused by: (1) workers sliding down extension ladders; (2) workers climbin' ladders while wearin' their climbers; (3) workers leavin' tools hangin' on ladders; and (4) workers usin' ladders which have spliced rails. Enuf sed!

Flashlights should be used when you're workin' in basements or other unfamiliar places where a light is needed. Under such circumstances—NEVER USE MATCHES.

Extinguish the flame on your tent heater and set the heater outside of the tent while you're boilin' out cable with paraffin, an' you'll do away with the possibility of a fire.

Wa'll I guess I better be perkin' along, so I'll ring off for this time. So long, buddies.


A minute ago we were a couple of human beings - but now we are just a couple of this year's automobile accident statistics
Leon Keroff

JAKE SAYS:
"Don't Be Just a Fool Number! When the Totals of This Year's Automobile Injuries and Deaths Are Added Up Next January, Don't Be One of the Many Humans Who Will Have Discovered—Too Late—That When a Car Ties Up With a Train It's Flowers and Sweet Music for the Occupants, Usually."

New York Convention Scheduled for May

The New York State Telephone Association will hold its annual convention this year in Syracuse on May 20 and 21. J. G. Ihmsen, of Albany, is general manager of the association. The hotel, where the meeting will be held, will be announced later.

January Station Gain of Bell System

The American Telephone & Telegraph Co. has announced that the Bell System in January showed an increase of 57,000 stations in service, compared with an increase of 30,100 during January, 1935.

Personal Items About Telephone Men

OSCAR HITT, secretary and manager of the Tenney Telephone Co., Alma, Wis., is undergoing hospital treatment at Wausau, Wis. His left arm was injured on November 30 when he was caught between two messenger wires. As a result, the motor nerves in his left arm were partly paralyzed, causing a numbness in three of his fingers. This is the second time within a year that Mr. Hitt has been confined to a hospital. On August 5 last he was obliged to undergo an operation at the St. Francis Hospital, LaCrosse, Wis.

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W. B. T. BELT, of Omaha, Neb., chairman of the board of directors of the Northwestern Bell Telephone Co., is expected to retire from active work after his return from a trip abroad on which he and Mrs. Belt have just embarked. He will reach the age of 65 on August 1, the retirement limit in the American Telephone & Telegraph Co. The Belts stop first in California, from which state they sail for Honolulu, Samoa, Fiji, New Zealand and Australian points, on a trip that will consume three or four months. Mr. Belt succeeded Casper Yost as president of the company on May 1, 1919, and became chairman of the board in December, being succeeded as president by A. A. Lowman.

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W. N. McANGE, JR., of Bristol, Tenn., president of the Inter-Mountain Telephone Co., was commissioned as an honorary colonel on February 4 by Governor McAlister.

Mr. McAnge is well-known throughout the telephone field and has been active in association work for a number of years. He was prominent in the organization of the Tennessee Independent Telephone Association last year and is a vice-president of it. He is also director of the United States Independent Telephone Association.

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JOSEPH H. HARTLEY has been appointed commercial artist on the staff of General Commercial Superintendent H. F. McCulla of the Lincoln Telephone & Telegraph Co. Mr. Hartley, in his new position, will work under the direct supervision of Norman Ott, advertising manager. Said Mr. McCulla in commenting on this appointment:

"Mr. Hartley is not only a commercial artist of outstanding ability, but his broad knowledge of the technical phases of the telephone industry will make him particularly valuable to our advertising program. His appointment comes as a recognition of his ability and years of training in this specialized field of commercial art."

Born in Steeleville, Ill., Mr. Hartley moved to Lincoln, Neb., with his parents at an early age, and has been a resident of that city for the past 30 years.

He entered the telephone industry in December, 1918, being first employed as a messenger boy in the general offices of the Lincoln company. It had just completed the consolidation brought

J. N. HARTLEY, Recently Appointed as Artist in the Commercial Department of the Lincoln (Neb.) Telephone & Telegraph Co., Has Been With the Company More Than 17 Years in Various Capacities.

about upon the acquisition of the Bell telephone properties in southeast Nebraska in 1912.

In August, 1917, Mr. Hartley was made a shopman, and in October of the same year he was transferred to the engineering department as draftsman. In July, 1927, he was made chief draftsman, the position he held until his recent appointment to the general commercial department.

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DR. GEORGE A. CAMPBELL, of New York City, has retired from the staff of the Bell Telephone Laboratories, Inc., after 38 years of service in the Bell System. He achieved considerable distinction for the work he did on the "loading" of telephone lines, a discovery which made it possible to talk over greater distances. Dr. Campbell is also credited with valuable work in connection with the removal of noise and crosstalk on telephone lines.

Dr. Campbell joined the staff of American Telephone & Telegraph Co. in 1897 after graduating from Massachusetts Institute of Technology and spending four years of graduate study in Europe. At that time telephone circuits of even a few hundred miles' length were rare, and the longest distance over which communication had been held was that separating New York and Chicago.

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S. B. GREEN, district manager for the Georgia Continental Telephone Co., at Dawson, Ga., for several years, has recently accepted an appointment as district manager for the Wabash Telephone Co. at Paris, Ill. He succeeds M. F. Carey, who will serve the company in another capacity. The Paris district of the **Wabash company** (with headquarters at Bloomington) includes the Marshall, Redmon, Chrisman, Vermilion, Metcalf and West Union exchanges.

Mr. Green has been engaged in the telephone business for approximately 30 years. After directing the operations of the Toledo Telephone Co., Toledo, Iowa, for three years, in the spring of 1926 he became general manager of the Tri-County Telephone Co., Clinton, Iowa. Then he went with the Southern Continental Telephone Co. of Cookeville, Tenn. From there he was transferred to Dawson, Ga.

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C. F. MASON, president of the Associated Telephone Co., Ltd., of Long Beach, Calif., and president of the Independent Telephone Association of California, better known to his many telephone friends as "Charlie" Mason, was a recent visitor to Chicago on his way to New York.

Very optimistic as to the future of the telephone industry and particularly his California properties, Mr. Mason says that in April, 1931, his company had in service 84,630 stations (when the depression started). As of January 1, 1934, they had decreased to 72,192; by January 1, 1935, they had increased to 74,130, and as of December 28, 1935, when he left California, the total number had increased to 78,734.

Mr. Mason expects the 1931 peak of 84,630 stations will be reached again before long.

His many telephone friends will be glad to know that he has practically recovered from the severe injuries he sustained in a railroad wreck last October.

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Harry C. Gretz of Washington, D. C., has been appointed assistant comptroller of the American Telephone & Telegraph Co. in New York. Mr. Gretz, prior to this appointment, was assistant

vice-president of the Chesapeake & Potomac Telephone Co.

Mr. Gretz has had an extensive experience in accounting and statistical work. He entered the Bell System in 1903 as a bill clerk with the Western Electric Co. at Philadelphia. In 1906 he joined the accounting department of the Bell Telephone Co. of Pennsylvania, at Philadelphia, as a clerk, and in July, 1910, became general bookkeeper. He was transferred in January, 1912, to the Chesapeake & Potomac Telephone Co. at Baltimore, Md., and in September of that year became supervisor of methods in the accounting department. In December, 1919, he was appointed chief accountant for the Chesapeake & Potomac group of Bell telephone companies.

On April 1, 1929, Mr. Gretz became general auditor of the Chesapeake & Potomac Telephone Co. at Washington, D. C., and assistant general auditor of the other three companies in the group. On November 1, 1930, he became general auditor of each of the companies in the Chesapeake & Potomac group. Since August 12, 1935, he has been an assistant vice-president of the Chesapeake & Potomac Telephone Companies.

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A. W. BARNARD, Toronto, Ont., assistant treasurer, western area, Bell Telephone Co. of Canada, retired on pension January 31, terminating an active career of 44 years' effective service with the company. Mr. Barnard joined the Bell service as traveling auditor in 1892 and was appointed to the position recently relinquished, in 1930, following an active experience in telephone administration.

A largely-attended banquet in the Royal York Hotel, Toronto, was featured by presentations to the guest of honor. P. H. Jennings, former auditor of receipts, western area, succeeds to the position of assistant treasurer. He is a veteran of 43 years' service with the Bell of Canada.

Obituaries

W. COMER MOORE, pioneer Independent telephone man of Tennessee and Kentucky—for the past ten years traffic manager of the Southern Continental Telephone Co., of Cookeville, Tenn—died recently in a Louisville, Ky., hospital as a result of injuries sustained when the automobile in which he was riding collided with a bus near Lebanon, Ky. Although only 57 years of age, Mr. Moore had been engaged in the telephone business for 33 years, with the Southern Continental and its predecessor, the Gainesboro Telephone Co.

When the fatal accident occurred, Mr. Moore was riding in company with J. L. Zeig, district manager, and Charles Stanton, auditor of the Southern Continental company. The latter was at the wheel. The accident took place on a slippery highway near Lebanon. Mr. Zeig suffered cuts and bruises about the head, and three fractured ribs. Mr. Stanton was not seriously hurt, although suffering a wrenched back and a head injury.

Mr. Moore entered the employ of the Gainesboro Telephone Co., in 1902, as clerk for a construction crew then engaged in building toll lines from Glasgow to Somerset, Ky. In 1909 he took a leave of absence from his work with the telephone company and engaged in selling road machinery. He returned to the ranks of the telephone company two years later and continued in its employ ever since.

He was considered one of the company's most efficient and loyal employes and his untimely death is keenly felt—not only among his associates but among his many friends in the telephone field as well. A 32nd degree Mason, a Shriner, an active member of the Methodist church, in Cookeville, his going will also be felt in many community circles. He is survived by his wife, two daughters and a son.

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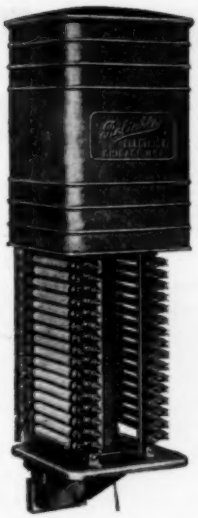
MELVIN HUTCHINS, a pioneer construction superintendent for the New England Telephone & Telegraph Co. system, died recently at York Village, Me., where he was living in retirement after 37 years' service. He was identified with the building of the first telephone line in Pittsfield, Lee, Great Barrington and Chester, Mass.

For three years Mr. Hutchins was manager at Holyoke, Mass., and later served as superintendent of construction at Springfield, Mass., and then as general foreman of construction with headquarters at Boston. In 1908, when the present functional organization was established, he was made division foreman of construction for the western area of Massachusetts, and retired from that post in 1919.

THIS NEW CABLE TERMINAL DEVELOPMENT



Offers You

Increased convenience for your cable splicer and lineman.

●

Every assurance of long "Terminal Life."

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Something new without adding more maintenance items to your stock lists.

●

More modern equipment at no extra cost. Write for further information or a sample.

Reliable Electric Company
CHICAGO

FINANCIAL OPERATING DATA

Pacific Bell Directors Authorize 3½% Bonds

Directors of the Pacific Telephone & Telegraph Co. on February 6 announced the authorization of a new bond issue of $30,000,000 and the calling of its $23,890,000 of 5 per cent mortgage bonds, Series A, due in 1952, for payment on May 1 next.

Immediate steps will be taken to obtain the necessary approvals from the state and national regulatory bodies. The new issue will be 30-year refunding mortgage 3½ per cent bonds, Series B, maturing on April 1, 1966.

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Good Year Reported by Carolina Company

The Carolina Telephone & Telegraph Co., of Tarboro, N. C., reports a net gain of 966 subscribers during 1935, an increase of 3.55 per cent. During the year a total of 1,582,699 long distance messages were completed, an increase of 11.9 per cent over 1934 and an increase of .09 per cent over the company's best previous year (1929).

The company now operates 87 exchanges in Virginia and North Carolina, with a total of 28,112 telephones. The turnover in its operating force was comparatively small in 1935, although 4 per cent above that for the preceding year. The number of employes was practically the same.

Last year the Carolina company installed automatic exchanges at Gatesville, Kenansville, Rose Hill and Vanceboro, N. C. It also converted to automatic operation the manual plants at Ayden, Louisburg and Wake Forest, N. C. New toll boards were installed at Louisburg, N. C., and Chase City, Va. During the year 100 miles of toll lines were rebuilt and a new toll line was constructed between Lawrenceville and Chase City, Va., a distance of 37 miles.

Other construction projects of the past year included the rebuilding of the company's outside plants in a number of exchanges, including Benson, Clinton, Warsaw, Wallace, Maxton, Red Springs, Smithfield, Elizabethtown and Bladenboro, N. C., and Clarksville, Va.

The company's income statement for the year ended December 31, 1935, shows total operating revenues of $1,340,373, as compared with $1,214,625 in 1934. Operating expenses totalled $802,141, as compared with $772,715. The net income of $308,847 compares with $245,140 in 1934. After the payment of dividends amounting to $239,998, a balance of $68,849 was carried to surplus, as compared with a surplus of $5,142 in 1934.

The taxes for 1935, amounting to $223,682, represent 16.7 cents out of every dollar collected. In addition, the company pays indirect taxes on gasoline, sales tax and federal taxes on toll messages.

Of the company's total assets of $5,362,349 at the close of 1935, $5,046,618 was assigned to physical plant. The liabilities include $2,399,900 of common capital stock, $1,636,544 in the depreciation reserve and $829,867 in the surplus account.

The officers of the company are as follows: A. McDowell, chairman of the board; George A. Holderness, president; J. R. Porter, executive vice-president; J. P. Taylor and C. A. Johnson, vice-presidents; C. P. McCluer, vice-president, secretary and treasurer.

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Current Prices on Listed Telephone Stocks

	February 8, 1936 High	Low	Last
American Telephone & Telegraph Co.	170	169¼	169⅞
Bell Telephone Co. of Canada	147	147	147
Bell Telephone Co. of Pennsylvania, pfd.	121¾	120½	120½
Cincinnati & Suburban Bell Telephone Co.	91	90⅞	91
General Telephone Corp.	15¼	15¼	15¼
International Telephone & Telegraph Corp.	17⅝	17	17¼
New England Telephone & Telegraph Co.	123	123	123
New York Telephone Co., pfd. (6¼)	119	119	119
Pacific Telephone & Telegraph Co. (6)	126⅛	126	126

BID AND ASKED QUOTATIONS

	Feb. 8 Bid	Asked	Feb. 7 Bid
Lincoln (Neb.) Telephone & Telegraph Co.	106	...	106
Mountain States Telephone & Telegraph Co. (8)	149	153	149
Northwestern Bell Telephone Co., pfd. (6½)	116½	117½	116½
Peninsular Telephone Co.	17⅝	18½	17⅝
Peninsular Telephone Co., pfd. (7)	108¾	111¼	108¾
Rochester (N. Y.) Telephone Corp., pfd. (6½)	111	113	111
Southern New England Telephone Co. (6)	144	146	142½
Wisconsin Telephone Co., pfd. (7)	115	117	115

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I. T. & T. Corp. Figures Show World Improvement

Further indication of the continued world recovery in 1935 is reflected in preliminary figures received by the International Telephone & Telegraph Corp. from its telephone operating subsidiaries throughout the world, showing an increase of well over 56,000 telephones for the year. This gain is one of the best in the history of the I. T. & T., exceeded only in 1929 and 1930.

The Spanish Telephone Co. contributed a gain of more than 25,000 stations, the system in Argentina approximately 12,000, Rumanian Telephone Co. 6,000, Cuban Telephone Co. 6,000, Chili Telephone Co. 5,000, the system in Puerto Rico 1,500, while systems in Mexico, Peru and Brazil also reported gains for the year.

The sizeable gains reported by Cuba and Puerto Rico reflect the improvement on those islands. Cuba advanced from a poor showing in 1934 to a gain of more than 6,000 stations in 1935, and the Puerto Rico company's 1935 gain is the largest in its history.

Figures for 11 months of 1935 show approximately 43,000,000 completed toll calls for the I. T. & T. system, as compared with 38,000,000 in the first 11 months of 1934, a gain of nearly 13 per cent.

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Illinois Bell's Net Rises to $7.62 a Share

The Illinois Bell Telephone Co. reports that its net income for 1935 was equivalent to $7.62 a share on the 1,500,000 shares of capital stock outstanding, compared with $6.65 a share in 1934. This computation, said F. O. Hale, president, in a statement to stockholders, eliminates adjustments made in the income statement because of the court order requiring refunds to certain coin-box subscribers in Chicago.

To the end of 1935, said President Hale, more than 1,132,000 separate payments had been made for a total of $16,537,000 in refunds. Approximately $2,300,000 remains to be distributed, and claims can be filed up to June 1, 1937. The total is about $1,225,000 less than estimated. The expense of making the refunds is put at more than $2,600,000.

The statement showed net earnings were $14,326,865, against $11,968,985 the preceding year. Net earnings were $325,573,000, at the rate of 4.47 per cent on the average cost of property and assets, compared with 3.92 in 1934.

Total revenues less uncollectible items were $76,134,795 last year, compared with $58,337,011 in 1934. The 1934 figure was reduced by $15,948,059 as part of the adjustments made on account of the refund. "Total operating expenses" rose from $35,984,299 to $55,335,017 chiefly because of adjustments in depreciation charges.

Adjustment of income taxes caused by the refunds cut the 1935 tax charge by $2,400,000, it was stated.

Current assets were cut from $28,282,226 to $20,464,676 and current liabilities

from $29,298,087 to $17,727,593, both reflecting the refund.

The company made gross expenditures of $13,984,251 for new construction last year, resulting in a $2,393,175 net increase in plant and equipment.

The number of telephones in service increased 36,344 stations—195,262 being connected and 158,928 disconnected. The number of telephones in service at the end of 1935 was 16 per cent below the peak in 1930. An average of 5,245,022 local calls a day was a 3 per cent gain over 1935. Toll and long distance messages increased 3.2 per cent.

At the close of 1935 the company had a total of 1,508,292 telephones in service as against 1,483,785 at the end of 1934. Of these, 738,376 were residential, against 709,300, and 489,825 business, against 482,567. Number of employes decreased to 21,896 from 24,231, but payrolls increased to $33,832,828 from $32,245,977.

The new 3 per cent utilities tax cost approximately $1,000,000 the last six months of 1935 and is estimated at $2,000,000 for 1936. This is being paid under protest, pending settlement of a suit to recover the tax and to pass it on to customers.

The company, the report states, has spent over $1,200,000 in preparing its defense in the investigation of its rate structure by the Illinois Commerce Commission.

The company for the year retired $48,726,200 of Series A 5s and sold $45,000,000 Series B 3½s. Redemption premium and unamortized discount of about $5,000,000 on the Series A bonds was charged to surplus. The refunding, according to the report, effected an annual interest saving of $861,310 and an annual cut of about $500,000 in fixed charges.

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General Telephone Corp.'s Report Shows Gain

The preliminary report for 1935 of the General Telephone Corp., successor in reorganization to the Associated Telephone Utilities Co., including subsidiaries but excluding the General Telephone Allied Corp., shows a net income of $999,345 after all deductions, compared with $900,121 for 1934. Gross revenue was $11,092,824, compared with $10,637,768.

The balance sheet as of December 31, 1935, shows total assets of $5,656,105. They include $1,170,450 of cumulative preferred stock in the Michigan Associated Telephone Co., $518,315 in the Southwestern Associated Telephone Co. and $940,000 in the Interstate Telephone Co.; $2,965,722 in common stock in the parent company and current assets amounting to $61,617. The liabilities include 38,580 shares of preferred stock issued and outstanding in the total amount of $4,108,771 and a surplus of $1,547,334.

The statement includes consolidated accounts of Associated Telephone Utilities Co. and subsidiaries and the estate of the company and subsidiaries up to July 17, 1935, the date of acquisition of subsidiaries by the General Telephone Corp.

Administrative expenses shown in the report are not indicative of what such expenses will amount to hereafter, it is stated. For 5½ months administrative expenses and taxes of the reorganized company were $58,552, and if used as an estimate for a full 12 months, net income after preferred dividends would be equal to about $1.24 a share, H. V. Bozell, vice-president, reports.

At the first annual meeting of stockholders, held in New York City on February 3, the following were elected directors to serve until the next annual meeting in April, 1937: Lawrence Bennett, Charles H. English, Robert O. Farrell, Robert A. Gantt, Alden L. Hart, George E. Jones, Morris F. La Croix, Herbert L. Nichols, Gardiner Symonds and Pearson Winslow.

The directors organized at a subsequent meeting by electing the following officers for the ensuing year: Vice-President and senior executive officer, Alden L. Hart; Vice-President Harold V. Bozell; Secretary and Treasurer, Robert F. Briggs; Comptroller, Thomas A. Boyd; Assistant Secretary and Assistant Treasurer, H. G. Hanson.

Mr. Hart was elected as executive vice-president, to serve as the senior executive officer of the corporation until such time as the new board of directors may select a president.

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New England Bell's 1935 Net Income

The annual report of the New England Telephone & Telegraph Co. for 1935, issued on February 4, shows a net income of $8,089,052 after all deductions, equal to $6.07 a share on 1,333,458 shares of capital stock, compared with $8,011,199, or $6.01 a share in 1934.

Surplus after dividends was $88,304 against $10,451 in 1934, bringing unappropriated surplus to $8,571,587 at the close of 1935, compared with $8,512,215 in 1934.

Operating revenue was $67,787,349, compared with $66,758,441 for 1934, and net earnings after depreciation and taxes were $13,272,777, against $13,347,547. Including non-operating income, total income was $13,414,736, against $13,552,848.

At the close of 1935 the company was serving 1,128,359 telephones, a gain of 14,971, compared with a gain of 6,279 in

(*Concluded on page 30*)

Stop complaints about

NOISES

interfering with phones

Recommend this remarkable Sound Absorbing Booth!

Noisy factories and mills need telephone communication booths which will muffle machinery and traffic noises—and yet operate efficiently without a door.

It is here! The Burgess Acoustic Communication Booth, lined with Burgess Acoustic Treatment, blots up noise as a blotter absorbs ink. It forms a "zone of quiet" in which telephone conversation is a pleasure.

Prepare yourself to answer noise complaints with full details of this amazing communication booth. Use the coupon below.

LICENSED UNDER C. F. BURGESS LABORATORIES, INC., PATENTS

Burgess Battery Company, (Acoustic Div.)
111 W. Monroe St., Dept. T, Chicago, Ill.

Please send bulletin and price on Burgess Acoustic Communication Booth.

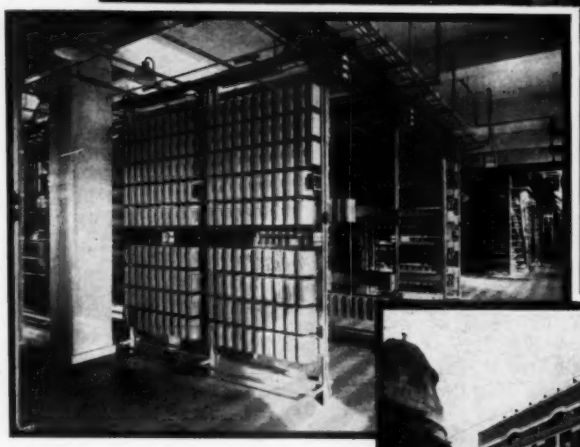
Name.....

Company.....

Address.....

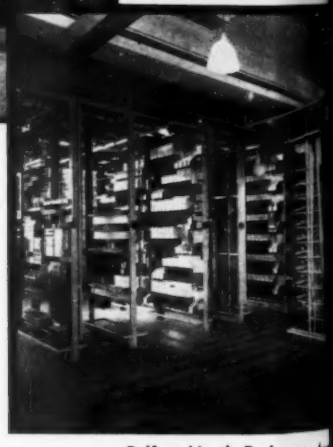
BURGESS ACOUSTIC
Communication Booth

SIEMENS AUTOM



Central Exchange
View of One of the
Apparatus Rooms

Telephone House, Belfast
(Central Exchange)



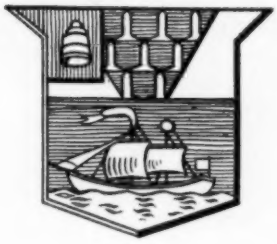
Belfast North Exchange, A

SIEMENS "NEOPHONE"

THE WORLD'S MOST EFFICIENT TELEPHONE

REPRESENTATIVES ABROAD: Winnipeg, Rio de Janeiro, Cairo, Cape Town, J... Eliz...
Perth, Wellington, Auckland, Shanghai, Calcutta, Bombay, Madras, Colombo, ...M.S.).

TIC TELEPHONES IN BELFAST



BELFAST, capital city of Northern Ireland, famous for shipbuilding and the centre of the Irish linen industry, has now the most up-to-date telephone system in the country.

The Belfast area has lately been converted from magneto to automatic working, the official opening taking place on the 25th, November last, in the presence of a distinguished company.

The system comprises 10 automatic exchanges providing a total of over 16,000 multiple lines. Belfast being the zone centre for Northern Ireland, manual switchboards consisting of 32 equipped positions are provided for dealing with junction, trunk and toll calls.

The complete exchange equipment was manufactured at our Woolwich Works and installed by us to the order of the British Post Office.

SIEMENS BROTHERS & CO., LTD.

WOOLWICH, LONDON, S. E. 18

Elizabeth, Durban, Melbourne, Sydney, Brisbane, Adelaide, Newcastle (N. S. W.),
M.S.), Kuala Lumpur, Malacca, Singapore, Penang, Bangkok, The Hague, Malta

(*Concluded from page 27*)

1934. Gross expenditures for construction were $13,990,000, resulting in a net increase in plant and equipment of $2,309,000.

Current assets were 12,003,608, against $11,689,315 the year before, while current liabilities were $5,490,929, against $5,124,433. Advances from the American Telephone & Telegraph Co. were $19,750,000, compared with $23,750,000 the year before.

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Special Committee's Report On Shanghai Telephone Co.

The report of the special committee of telephone experts on the operations of the Shanghai Telephone Co. of Shanghai, China, and its recommendations as to a new rate structure estimated to yield the company approximately the return on its investment provided for in its franchise, namely, a return of 8 per cent and 2 per cent, appears in the October 25 issue of the Municipal Gazette, of the Council for the Foreign Settlement of Shanghai.

J. G. Wray, well-known American telephone engineer of J. G. Wray & Co., Chicago, was one of the experts who served on this committee. His colleagues were Major Harry Brown, until last July assistant chief engineer of the British Post Office; Z. H. Hu, director of long distance telephone lines in China; Dr. S. Inada, until recently director of telephones and telegraphs in Japan.

The committee recommended the introduction of a message rate system of charging for service in view of the abnormally high calling rate of 14.8 messages per day. This is double the daily average rate prior to 1930. There is recommended an initial monthly rate of $10 for business subscribers, to include 150 calls; additional calls to cost three cents each and extension telephones to cost $5 per month. For residence service a rate of $6.50 for the first 100 calls is suggested, with a charge of three cents each for additional calls.

Reductions are recommended in charges for desk telephones, installation charges, restoral charges and rates for P.B.X. stations.

The committee found the company book cost of investment in plant to be $42,294,000 as of July 31, 1934. It was expected to reach the figure of $42,830,000 by December 31, 1935.

To the charge that the company's expenditures have been extravagantly made, the committee finds that they were reasonable and necessary under the conditions prevailing. The principal reason, it states, for the difference in the actual cost of converting Shanghai's telephone system to automatic operation in the two-year period ending July 31, 1932, and the cost as estimated in the Anson report, was due to the fall in the value of the tael. When the Anson report was made 100 tael were worth $61.839. During construction of the new system it fell to $33.114 and on July 31, 1930, was $37. The company's actual expenditures during the conversion period were Tls. 17,735,000, while the figures in the Anson report were Tls. 8,000,000.

According to the recent investigation, the investment of the Shanghai Telephone Co. in station equipment was $5,894,775 on December 31, 1934. The average per station cost is $78. The investment in P. B. X. equipment is approximately $1,400,000. There are more than 1,000 P. B. X. exchanges and the average investment is about $1,400. The investment in central office equipment amounted to $17,848,247, an average cost of $400 per line.

The depreciation rate amounts to 4.5 per cent on the overall value of the company's property.

Regarding the abuses of the flat rate system of charges, the committee reports that it is common practice for subscribers to allow customers and many other individuals free use of their telephones. The calling rate doubled between 1930 and 1934 (increasing to 14.8 daily calls per line). This increase has caused a heavy rise in the capital and operating expenses. For these reasons the committee recommends a message rate schedule, based upon the value of the service, in the belief that its adoption would prove of the greatest value to the community.

The Shanghai Telephone Co. operates nearly 50,000 telephones. Since the organization of the Shanghai Telephone Co., in 1930, to take over the old Shanghai Mutual Telephone Co. and convert the entire system to automatic operation during the ensuing year there was a station growth of 8 per cent in 1931, of 16 per cent in 1932, and of 11 per cent in 1933 and in 1934. In 1935, a loss of 4,000 stations was had, about 12 per cent.

Condensed News

New Companies

WEST LIBERTY, KY.—The Morgan Telephone Co. has been incorporated here with a capital stock of $10,000. The incorporators are Lynn B. Wells, C. K. Stacy, W. B. Wells and Buford S. Wells.

SEATTLE, WASH.—The Saniphone Service, Inc., has been incorporated with a capitalization of $50,000. Its purpose is to disinfect, sterilize, service and clean telephones and telephonic and dictaphonic equipment. W. R. McDonald, Don F. Lawwill and F. M. Reischling are the incorporators.

Franchises

OXFORD, N. C.—A 25-year franchise was recently granted the Carolina Telephone & Telegraph Co. An agreement was reached whereby the privilege tax of $1 per pole would be repealed provided that the company establish and operate without charge a fire alarm system throughout the city, and to grant the city nine telephones which would be used for municipal purposes only.

It is understood that within a short time, the fire alarm system, together with the dial telephone system, will be established in Oxford.

KLAMATH FALLS, ORE.—By unanimous vote, the city council recently overrode Mayor Willis Mahoney's veto of an ordinance renewing the franchise of the Pacific Telephone & Telegraph Co. Councilmen said they did not wish the city to lose $800 a year free service provided by the company.

Mayor Mahoney vetoed the franchise, and denounced the company for going into court to fight rate reductions ordered by the public utilities commissioner.

Telephones

NEW YORK, N. Y.—The New York Telephone Co. reports a net gain of 6,440 telephones for January, compared with a loss of 487 stations in the corresponding month of 1935, a gain of 89 in 1934, and losses of 18,329 and 13,443 respectively in 1933 and 1932.

COLUMBUS, OHIO.—The Ohio Bell Telephone Co. reports it connected 1,106 telephones in Columbus during January. During the same period 682 were disconnected, leaving a net gain of 424 telephones. This was the largest increase for any January since 1931. The number of connections made was the largest since 1932, while the disconnections were the least in any corresponding period for the five years.

The increase for January brought the total number of telephones in Columbus to 66,384.

PHILADELPHIA, PA.—The Bell Telephone Co. of Pennsylvania had a net gain of 3,849 telephones in January, the largest gain for that month since 1930, when the increase was 4,421. In 1935 the net gain was 2,062, compared with a gain of 750 in 1934 and a loss of 11,011 in the first month of 1933.

BARNESTON, NEB.—At the annual meeting of the Barneston Mutual Telephone Co., Joseph Sedlacek was elected president; George Houseman, secretary-treasurer; George Ehlers and Victor Suggett, directors.

HOLLAND PATENT, N. Y.—At the annual meeting of the Oneida County Rural Telephone Co. these officers were elected: President, Dr. Ira G. Wells; first vice-president, C. Ganey; second vice-president, J. Brayton Fuller; general manager, secretary and treasurer, Peter E. McCarthy.

The following board of directors was elected: C. Ganey, Ellis D. Jones, Gertrude Jones, Peter E. McCarthy, Elias W. Jones, J. Brayton Fuller and Dr. Ira G. Wells.

Activities of Commissions and Courts

Per Station Telephone Tax Opposed in Bay State

Charles S. Pierce, vice-president and general counsel of the New England Telephone & Telegraph Co., recently appeared before the legislative committee on taxation at Boston, Mass., in opposition to a proposal of a recess tax board to assess a tax of $1 per subscriber's station per year upon the Massachusetts business of the company.

The recess commission's report has been published as House document 143, and advocates increasing utility taxes generally, on the ground that the rights enjoyed by the companies warrant such a program. The board opposed passing along such taxes to the users of utility service, apparently being willing to take it out of the stockholders of the companies despite the already burdensome tax impositions borne by them in relation to revenue.

Mr. Pierce said that the New England company paid a franchise tax of about $353,000 in 1935, and that there now are about 900,000 subscribers in Massachusetts. Last year the company earned but $6.07 per share of common stock, the dividend being $6. If the company does not pay at least 6 per cent, the bonds become illegal for savings bank investment in the state.

He pointed out that $117,000,000 out of the company's approximate capitalization of $133,000,000 represents money paid in at $100 par per share, the difference being due chiefly to allowances of stock made when the Providence (R. I.) Telephone Co. was bought in many years ago. In 1935 the balance for surplus earned was only $88,000, the year before it was $10,000, and in 1933 there was a deficit of $235,000. Large holdings of the company's bonds are in Massachusetts savings bank portfolios.

Unless added taxes are taken from the company's customers, Mr. Pierce declared, the only other sources of tax money are wage cuts or rate increases, bearing in mind the foregoing dividend requirement. Answering a query, Mr. Pierce said that in 1935 the company's total expenditures for non-contributory pensions, disability, sickness and death benefits were about $1,000,000.

Mr. Pierce stated that it is impossible to tell what the effect of the Federal Security Act (old age pensions) will have upon the company's pension plan. He did not, as some press accounts of the hearing averred, say that the plan would be jeopardized by this legislation, although its prospective burdens are but little appreciated as yet.

In conclusion, Mr. Pierce said that the surplus of the New England company had reached but $8,571,000 in 53 years' operations. There are about $75,000,000 in outstanding bonds, with rates of 4½ and 5 per cent. The company is in no position, he asserted, to carry heavier tax burdens.

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State Demurs in Wisconsin Injunction Plea

The state of Wisconsin on February 6 interposed a demurrer on the ground of no cause of action to a complaint served on the Wisconsin Public Service Commission asking an injunction from the Dane County Circuit Court at Madison, restraining the commissioners from placing in effect the accounting order for telephone companies issued some months ago.

The plaintiff in the suit in which the demurrer was interposed is the Commonwealth Telephone Co., but the Wisconsin Telephone Co. has also begun a similar action against the commission and a demurrer will be presented by the state in that action also.

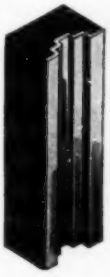
The petitions of the telephone companies allege that compliance with the order of the Wisconsin commission is impossible. They also challenge the jurisdiction of the commission to issue the orders, claiming that the Federal Communications Commission has sole jurisdiction over telephone company accounting of interstate companies.

The real attack of the telephone companies is against the limitations on depreciation accounts that the orders provide.

Attorneys for the state say that the orders of the Wisconsin commission are almost identical with the accounting system set up by the Federal Communications Commission for telephone companies, save that after a suit was begun in the Federal court in New York, challenging some of the limitations imposed by the Federal Communications Commission's activity, these clauses were, in a modified order, stricken from the Wisconsin commission's plan.

The suits have been brought in the Dane County Circuit Court and it is expected an early hearing will be held on the demurrers. Possible carrying of the case ot the United States Supreme Court is seen in the setting up in the

COOK



TRUE GAP DISCHARGER

The Cook True Gap Discharger is designed to relieve telephone circuits of high potential without permanently grounding the line.

A heavy bronze discharger is moulded into a bakelite block the size of an ordinary carbon. On the top of this bakelite block is a bronze cap anchored to the discharger blade.

The discharger practically eliminates grounding caused by the accumulation of dust and moisture on the exterior of the unit.

The True Gap Discharge surface is fully enclosed to prevent any possible grounding by dusting of the ground carbon.

This remarkable unit will assure protection without permanently grounding the line. That means better service at a lower maintainance cost.

The Cook True Gap is recommended for use in Pole Cable Terminals, Sub-station Protectors and Rural Line Arresters.

UNIT DISCHARGER

This discharger is designed to protect telephone circuits from hazards of 500 volts or more, for which nearly all other dischargers are not sensitive or accurate enough.

The unit consists of two special grooved, extremely hard carbons and a celluloid dielectric sealed together.

Particularly recommended for central office protection.

COOK ELECTRIC CO.
CHICAGO

For Your Protection Specify Cook

complaints of the telephone companies of the federal question of taking property without due process of law.

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Commission Rulings and Schedule of Hearings

Federal Communications Commission

February 5: Order issued by Telephone Division directing the Western Arkansas Telephone Co., of Russellville, Ark., to file with the FCC within 30 days from date of service of order, full and complete responses to orders No. 1, 2, 3, 5, 6A and 9 of the Telephone Division or an answer in writing, setting forth facts upon which it relies as justification, if any, for its failure to respond to these orders. Following failure to do such, the matter will be assigned for hearing.

February 5: Order issued by Telephone Division reclassifying the Barneston Mutual Telephone Co., of Barneston, Neb., as a "connecting carrier" and holding it subject only to the jurisdiction of the FCC under Sections 201-205 of the Communications Act.

March 9: Hearings in Indianapolis, Ind., before Chief Examiner Davis J. Arnold on application of persons seeking permission to occupy positions on the board of directors of more than one telephone company. The individuals concerned are F. E. Bohn and R. J. Dunlap of the Home Telephone & Telegraph Co. of Fort Wayne; T. A. Danielson and F. M. Lantz of Warsaw and J. S. Powell of Indianapolis.

March 24: Hearing in Columbus, Ohio, before Telephone Division representative to hear the case of the Garrett Telephone Co., of Garrett, Ind., and of the Champaign Telephone Co., of Urbana, Ohio, as to why they should not file responses to certain FCC orders.

March 25: Hearing in Columbus, Ohio, before representative of the Telephone Division to hear the cases of the Mansfield Telephone Co., Mansfield, Ohio, and of the Chillicothe Telephone Co., Chillicothe, Ohio, as to why they should not file responses to certain FCC orders.

March 30: Hearing in Madison, Wis., before a representative of the Telephone Division of the FCC to hear the cases of the Barron County Telephone Co., of Rice Lake, Wis., and of the Milton & Milton Junction Telephone Co., of Tomah, Wis., as to why they should not file responses to certain FCC orders.

March 31: Hearing in Madison, Wis., before a representative of the Telephone Division of the FCC to ascertain why the North-West Telephone Co., of Tomah, Wis., should not file responses to certain FCC orders.

Arkansas Department of Public Utilities

January 31: Hearing on appeal of the Southwestern Bell Telephone Co. from the action of the city council at Hope in passing an ordinance directing a reduction of telephone rates in that town. The reduction, if enforced, would cause the company to sustain a loss of more than $4,000 a year on the Hope exchange, the petition said.

The company asked that the department suspend the proposed rates and leave existing schedules in effect. Officials of the company said at the time the ordinance was passed that the plant at Hope, even under the old rates, had not shown a profit for several years.

California Railroad Commission

January 23: Petition filed by approximately 975 telephone subscribers of San Marino, protesting against the division of the city of San Marino by the Southern California Telephone Co. into two telephone extensions and asking for improved telephone service.

Specifically, the petition requests that each resident of San Marino be provided a telephone service whereby he can telephone to and receive calls from every resident of the city; that all San Marino telephones be placed under the Pasadena exchange without extra charge for extended service and that all telephone subscribers of the city be placed in one telephone book.

The petition declares the city is divided between the Pasadena and Alhambra exchanges and that it is necessary to pay toll charges to call a resident on the opposite side of the community.

Illinois Commerce Commission

February 10: Hearing in Chicago on complaint of Clarence M. Shapiro against the Illinois Bell Telephone Co. requesting restoration of telephone service in the city of Chicago. The Illinois Bell company filed a petition for rehearing, which was granted.

February 10: Hearing in Chicago on the commission's citation, on its own motion, against the Illinois Bell Telephone Co., to show cause why there should not be a reduction in rates for intrastate telephone service in the state of Illinois. (Entry of appearance of Chicago, Maywood, Olympia Fields and Richton Park.)

February 10: Hearing in Chicago on proposed change in rates for telephone service of the Illinois Bell Telephone Co. stated in I. C. C. No. 1 original sheet No. 5 general local exchange tariff, telephone service I. C. C. No. 2 original sheet No. 1A, schedule of toll rates I. C. C. No. 2 original sheet No. 1A, rates for special contract service, and I. C. C. No. 2 section 1 original sheet No. 6 teletypewriter exchange service tariff. (Consolidated with case 23146.)

February 10: Hearing in Chicago on application of the Central Illinois Telephone Co. for authority to keep certain records, books, accounts, documents and other writings relating to contracts at the general office of the Associated Public Utilities Corp. in Columbus, Ohio.

February 10: Hearing in Chicago on petition of the Illinois Standard Telephone Co. for authority to keep certain records, books, accounts, documents and other writings relating to contracts at the general accounting offices of Associated Public Utilities Corp. and subsidiary companies in Columbus, Ohio.

February 10: Hearing in Chicago on application of the Western Illinois Telephone Co. for permission to keep its books and records at the general office of the company located in Badgerow Bldg., Sioux City, Iowa.

February 11: Hearing in Chicago on proposed change in rates of the Illinois Valley Telephone Co., the Illinois Telephone Co., and the Automatic Home Telephone Co.

February 11: Hearing in Chicago on proposed change in rates for telephone service of the Northwestern Illinois Utilities Co., stated in rate schedule I. C. C. No. 2, sheet No. 1A of the company. (Consolidated with cases 23845 and 23846.)

February 14: Hearing in Chicago on complaint of the Clearing Industrial Association, et al., against the Illinois Bell Telephone Co. charging unjust and unreasonable charges for service furnished to complainants in the Chicago exchange area.

Kansas Corporation Commission

January 25: Permission granted the United Telephone Co., of Abilene, to discontinue operation of its exchange at Burr Oak. Insufficient revenue was given as the cause for the discontinuation.

Missouri Public Service Commission

February 7: Hearing on application of L. H. Garst, operating as Webster County Telephone Co., for authority to

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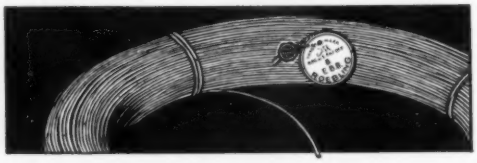

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Answers to Questions Given on Page 13

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3. If the call is passed properly, as "(Called place) Information," the Inward operator should not challenge the call.
4. The reports which are received when the first attempt is made to complete the call.
5. Say, "Call operator (number of proper point-to-point position) at (name of your office) (called place) (called number) or (address name) all trunks busy. I will hold this circuit."

file rates for common battery service and to issue mortgage note.

Nebraska State Railway Commission

February 1: Complaint filed by Wayne Rendering Co. against Cedar County Farmers Telephone Co. alleging discrimination in rates.

February 1: Complaint filed by Jackson Telephone Co. against Northwestern Bell Telephone Co., alleging unauthorized increase in switching rates.

February 1: Complaint filed by C. N. Wall, of Champion, against Central Nebraska Telephone Co., respecting toll rates.

North Dakota Board of Railroad Commissioners

February 4: Hearing in Bismarck on three applications proposing establishment of telephone service under a new company for five communities in the state.

One application requests permission to sell telephone properties of the Utilities, Inc., of Fargo—located at Backoo, Bowesmont, Drayton, Lawton and Michigan—to M. H. Roseland of Dupre, S. D. The application is made by T. P. Clifford of Mohall, as receiver for the Utilities, Inc.

A second application seeks permission to sell similar properties purchased by Mr. Roseland to the new concern, the Northern Telephone Co., with headquarters at Drayton. The third application asks permission to issue 10,000 shares of stock of the Northern Telephone Co.

Ohio Public Utilities Commission

February 5: After the Jennings Telephone Co. had presented its evidence in its application to increase rates at Venedocia before the commission on this date, that body received a petition of remonstrance by mail from a committee of subscribers.

The committee advised the commission of their inability to appear because of adverse weather conditions and protested against the granting of any increase in rates, premised largely on the fact that Venedocia is a small rural development, which they contend should not be subjected to the costs of metropolitan administration and maintenance.

The commission offered the committee a further opportunity to be heard if they would indicate the date when they will come to Columbus.

February 6: Approval granted agreement offered by the Northern Ohio Telephone Co. and the Summit Telephone Co. in adjustment of several informal complaints, providing for a dual development of territory along Smith Road for one mile about four miles east of Medina.

Oregon Public Utilities Commission

January 23: Order issued directing the West Coast Telephone Co. and certain other telephone concerns to file a schedule of depreciation rates in compliance with the 1913 classification of the Interstate Commerce Commission. A previous order directed the telephone companies to file their depreciation rate schedule in compliance with the uniform classifications prescribed by the Federal Communications Commission. This order is now in litigation.

Pennsylvania Public Service Commission

January 16: Authority granted the United Telephone Co. of Pennsylvania, with main offices in Harrisburg, to issue $745,000 of common stock. The company operates in several south-central Pennsylvania counties. Of the total issue, $534,650 of the common stock will go in part payment for the acquisition of 11 telephone companies serving areas contiguous to that of the United company. The commission authorized the United company on July 2, 1935, to acquire the assets of the 11 companies.

Proceeds from the sale of the remaining stock will be placed in the treasury in reimbursement for net fixed capital additions made during the period from January 1, 1929, to October 31, 1935.

The companies whose assets were acquired are: Allensville Telephone Co., Bald Eagle Telephone Co., Bedford-Fulton Telephone Co., Claar Telephone Co., Farmers Telephone Co., Milroy & Reedsville Telephone Co., Morrison's Cove Telephone Co., Nittany Telephone Co., Perry County Telephone & Telegraph Co., Pfoutzes Valley Telephone Co., and the Woodcock Valley Telephone Co.

The agreement with the companies, whose assets were acquired, provided that the United company would assume their liabilities and pay to them, as consideration, various amounts from its own common stock or cash, or, in some instances, both stock and cash.

West Virginia Public Service Commission

February 5: Hearing on petition of the Southeast Public Service Co. to sell its properties to the Central Electric & Telephone Co., of Chicago. The Southeast company serves Romney, Moorefield, Petersburg and other cities in the eastern section of the state.

Wisconsin Public Service Commission

January 29: Order issued authorizing the extension of temporary rates charged by the Ogema Telephone Co., the Pigeon Valley Farmers Telephone Co., the Eleva Farmers Telephone Co., the Schleswig Telephone Co., the latter of New Holstein.

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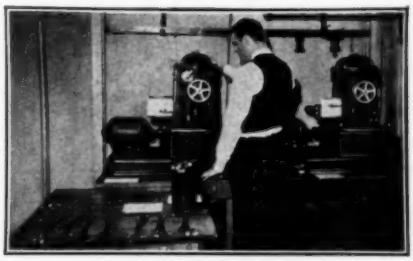
In addition to the "Bomb Test," samples of all Whitney Blake Telephone Wire are tested in a machine especially designed for checking the strength and density of rubber compound of Telephone Wire. The long life of Whitney Blake Telephone Wire is partly due to the use of this unique machine, which indicates the ability of the insulation to withstand the stresses and strains it will be subjected to during and after installation.



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Detailed Theory and Practical Applications of Repeating Coils

There are many uses for repeating coils in telephone circuits. They have solved many problems, such as the electrical separation of certain parts of a telephone circuit, the addition of line circuits without a corresponding increase in line conductors, and the reduction of inductive interference due to power lines paralleling telephone lines.

The average telephone man is familiar with the uses of repeating coils but often lacks definite information pertaining to the characteristics of the different types utilized in telephone work. This article discusses the theory of repeating coils, their physical features, the characteristics of different types, and their applications. Much of this data was drawn from the Automatic Electric Co. circular No. 1553, "Characteristics of Autelco Repeating Coils," and Bulletin No. 206 of the Kellogg Switchboard & Supply Co.

Theory of the Repeating Coil

The term "repeating coil" refers to the ability of the repeating coil to "repeat" or transfer electrical energy from one circuit to another circuit not directly connected to it. It is really an *electrical transformer* in which the energy transfer is accomplished by magnetic induction. The transfer of electrical energy by induction is explained as follows:

It is a fundamental fact that, when a conductor is "cut" by magnetic lines of force as the result of its motion in a magnetic field, a voltage will be induced in the conductor, and current will flow when a complete conducting path is provided for it. The same action will result if the conductor is placed near another conductor carrying an alternating current so that the fluctuating field set up by the alternating current will "cut" the first conductor.

The effect, of course, is only relative for, in the first condition, induction takes place as the result of the motion of the conductor in a stationary magnetic field, while, in the second, it results from the expansion and contraction of the magnetic field which "cuts" the conductor.

Now, if each of the two conductors is wound into a coil containing a number of turns, and the coils placed so as to surround a closed iron core, a basic transformer will result. Impressing an alternating current voltage across the terminals of one coil (the primary) will result in setting up an alternating magnetic field which will be mostly confined

to the closed iron core. However, because the turns of the other coil (the secondary) surround the core and are thus cut by the fluctuating magnetic field, a voltage will appear across the terminals of that coil.

Relationships in Transformer

The magnitude of the induced voltage in the secondary winding of a transformer depends on the value of the impressed voltage and the ratio of the turns in the primary coil, p, to those of the secondary, s. This relationship is expressed in the following equation:

$V_p/V_s = N_p/N_s$, where V = voltage and
N = number of turns.

In a magnetic circuit, the magnetic flux depends upon the ampere-turns, i. e., upon the product of current flowing in a coil and the number of turns in the coil. With the same magnetic flux linking the primary and secondary coils, the ampere-turns of the first coil equal the ampere-turns of the second, giving the following equation:

$N_p/N_s = I_s/I_p$, where I = amperes.

It will be noted that the primary and secondary currents are in reverse ratio to the respective number of turns on each winding. In a transformer in which the impressed voltage is stepped up, the output current is proportionally less than the input current. The reverse of this occurs when the primary voltage is stepped down.

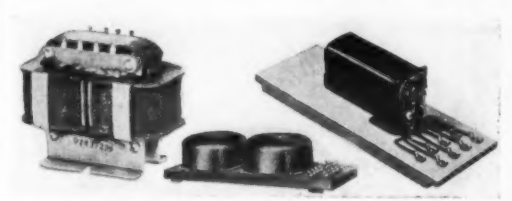
Another and more useful equation (to the telephone man) is derived from the relation $Z_p = V_p/I_p$ and $Z_s = V_s/I_s$ and the previous two equations discussed, viz:

$Z_p/Z_s = N_p^2/N_s^2$, where Z = impedance in ohms.

It should be noted that, in power applications, a transformer is designed either to step-up or step-down an applied voltage for the efficient transmission of high power. While, in a few cases, a telephone repeating coil may be used to alter the magnitude of an impressed voltage, primarily it is employed for energy transfer from one circuit to another when it is desired to avoid direct electrical connection. It is also used to match unequal impedances.

Physical Features of Repeating Coils

Fig. 1 illustrates the general appearance of several makes of repeating coils, all of which, except in a few special cases, utilize four windings on a common iron core. Three general types of core construction are employed in repeating coils: toroidal, closed square, and shell.



Automatic Electric. Western Electric. Kellogg.
FIG. 1. TYPICAL REPEATING COILS.

The toroidal core is made of a continuous winding of fine silicon steel wire, which gives it excellent magnetic properties. The shell and closed square types are built up of thin silicon steel laminations.

Silicon steel, which is steel containing 4 per cent of silicon, is utilized because it has the characteristics of high permeability at voice frequencies, and high electrical resistivity (about five times that of ordinary iron) to eddy currents. The use of fine wire or thin lamination construction still further reduces eddy current losses to a very small amount.

Balanced Windings

In the manufacturing process, each of the four windings is carefully placed on the core so that each will balance the other with respect to distributed capacity, inductance, and effective resistance. Proper balancing of the windings is necessary to prevent crosstalk, and the introduction of noise from alternating current power sources, due to circuit unbalance in the repeating coil (true on phantom circuits).

The method by which the windings are electrically balanced differs somewhat according to the manufacturer. The torodial type utilizes two wires wound together in parallel on the core to form the first two windings; the last two *are not so well balanced as the first.* However, this objection is overcome by utilizing the parallel windings for the line side of the repeating coil and the individual windings for the drop side where the effects of slightly poorer balance are not so important.

Other makes of repeating coils utilize two line windings and two drop windings, each set being wound in parallel, which makes for better electrical balance. The coils may be wound concentrically (one over the other) or in tandem (side by side).

The Manufacturers' Department

Wood-Preservers' Group Selects New President

R. S. Manley, president of the Texas Creosoting Co., of Orange, Texas, has been elected president of the American

R. S. MANLEY, President of Texas Creosoting Co., Orange, Texas, Who Has Been Elected President of American Wood-Preservers' Association.

Wood-Preservers' Association. Announcement to that effect was made at the organization's recent annual convention, in Memphis, Tenn. Having been connected with the wood-preserving industry in an executive capacity for some 30 years, Mr. Manley is thoroughly grounded in the problems of that industry and well fitted to direct the activities of the association.

A native of Junction City, Kans., Mr. Manley graduated from the U. S. Naval Academy in 1901. He served on the U. S. S. Harvard during the Spanish American War, as a cadet during the years 1901 to 1906 and from 1917 to 1918, during the World War, as lieutenant commander.

Since 1906 Mr. Manley has been connected with the wood-preserving industry as manager of the Gulfport Creosoting Co., Gulfport, Miss., and as president of the Creosoted Materials Co. of New Orleans, La. From 1923 to the present time he has also served as president of the Texas Creosoting Co., of Houston and Orange, Texas.

▼ ▼

Manager, Telephone Division, Gould Battery

Frank L. Eldridge, 11 So. LaSalle street, Chicago, has been appointed manager of the telephone division of the Gould Storage Battery Corp., Depew, N. Y. He will also continue to serve as special representative of the Ray-O-Vac Co. (successor to the French Battery Co.) in telephone, railroad and industrial fields. There being no competition between producers of storage batteries and manufacturers of dry cells, Mr. Eldridge's new appointment does not conflict in any way with the continuance of his present activities; in fact, one supplements the other.

Mr. Eldridge has a host of friends and acquaintances in the Independent telephone field, having been engaged in promoting sales to companies during the past 22 years. Prior to engaging in sales

FRANK L. ELDRIDGE, Chicago, Ill., Prominent in the Telephone Field for Many Years, Has Been Appointed Manager of the Telephone Division of Gould Storage Battery Corp., in Addition to Continuing to Serve as Special Representative of the Ray-O-Vac Co.

work he spent many years in various branches of operating and association work. He served as special representative for the Kellogg Switchboard & Supply Co. for 4½ years prior to his appointment with French company in 1919.

As manager of the telephone division of the Gould Storage Battery Corp., Mr. Eldridge will direct the sale of storage batteries to telephone companies. Arrangements have been made with leading telephone equipment and supply houses to distribute Gould batteries used in telephone work. Speedy delivery of batteries for new switchboards and replacements will thus be assured.

A special service bureau for making inspections will also be organized. Engineers sent out by the bureau will contact operating companies where Gould installations are made, to enlighten them regarding the proper operation and maintainance of their storage batteries.

A pioneer in the manufacture of lead acid storage batteries—the Gould Storage Battery Corp., with headquarters in Depew, N. Y., has steadily led or kept pace with progress in its field.

Originally organized in 1899, the company was equipped at the beginning to manufacture only Planté type batteries for railroads. Today it manufactures a lead battery for every type of service—telephone, power, railroad, ships, fire alarm service and thousands of industrial units—including armored Kathanode cells as well as Dreadnaught and Planté cells.

Bulletin No. 975, recently issued by the Gould Storage Battery Corp., describes the various types of Gould "sealed in glass" telephone batteries. Where minimum first cost is of prime importance, the company states that Dreadnaught cells will fill all requirements in a satisfactory manner.

These cells are of the paste plate type. Hand-pasted plates are said to assure thoroughly compacted active material in heavy staggered bar grids. Perforated hard-rubber envelopes opening at the

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wound concentrically (one over the other) or in tandem (side by side).

types of core construction are employed in repeating coils: toroidal, closed square, and shell.

minals of one coil (the primary) will result in setting up an alternating magnetic field which will be mostly confined

top and bottom, with solid vertical edges, encase each positive plate. These envelopes with heavy, grooved white cedar separators provide extra insulation and correct spacing.

Armored Kathanode cells, which are relatively low in cost, have elements assembled with positive Kathanode units and paste type negative groups insulated with heavy, grooved white cedar separators. The positive active material is retained in the rugged antimony lead-supporting structures by the laminated spun glass retaining mats and perforated hard rubber envelopes which constitute the positive elements from which the postive Kathanode units are assembled. These, when combined with negative groups of equivalent characteristics, produce a long life cell requiring very little maintenance.

Gould Planté cells have elements made up of Planté positive and Faure negative groups, insulated with heavy, grooved white separators. The positive plates, shaped from pure lead sheets by the "Gould spinning operation," have the active material formed directly from the pure lead base by the exclusive Gould C. P. process. These groups, with the other component parts, result in cell designs of exceptionally long life, the company states, requiring a minimum of care and attention—a battery of sustained voltage and current charactistics.

Handling both storage and dry batteries, Mr. Eldridge is now equipped to talk "batteries" regardless of the size or type of exchange. During the next few months he will exhibit his "battery" line at the various state telephone conventions.

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Four Wheel Drive Company's 1935 Business

An increase of 43 per cent in total sales for 1935 over the total for 1934 has been announced by Walter A. Olen, president and general manager of the Four Wheel Drive Auto Co., Clintonville, Wis.

"The general progress of the company can best be realized," said Mr. Olen, "from the fact that each month for the last 26 months there has been an increase in FWD truck sales over the corresponding month of the preceding year."

Mr. Olen at the same time made the following prediction as regards the outlook for the automotive transportation field during 1936:

"The greatest concentration of engineering efforts in 1936 will be devoted to the design of safer trucks and passenger cars. Likewise, a great deal can and will be accomplished in the production of safer and more reliable trucks. All of the foregoing factors will contribute to a more economical use.

"There should be an increase of 30 per cent or more in the manufacture and sale of trucks over that of 1935. In addition to a definite recovery in business demanding an increased quantity of commercial vehicles, there are a great many new applications of trucks springing up."

▼ ▼

Leich Electric Appoints New Chief Engineer

Harold M. McCreary has been appointed chief engineer of the Leich Electric Co. at Genoa, Ill., which manufactures a complete line of telephone equipment. The company also manufactures railroad signal relays, and relays used in electronics as well as in a number of other electrical specialties.

Mr. McCreary has held a number of responsible positions in the communication field, serving as chief engineer for the Chicago Television & Research Laboratories for two years, and as assistant to the consulting engineer of the Railroad Supply Co. for two years. He was research and development engineer with the Automatic Electric Co. for over three years and inspection methods development engineer for the Western Electric Co. for 2½ years. He is a graduate electrical engineer from the University of Nebraska and has taken post graduate work.

HAROLD M. McCREARY, New Chief Engineer of the Leich Electric Co., Genoa, Ill., Is Well Fitted For His New Duties Through His Wide Experience.

To Mr. McCreary have been issued over 14 patents on communication inventions and quite a number of applications on file. Perhaps the most noteworthy is patent No. 2,013,162, on television, which has just been issued. This was the first patent application filed in the United States patent office to disclose a mosaic structure for a cathode ray television transmitter.

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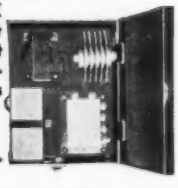

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Buyer's Weekly Guide

A list of firms and companies offering equipment, supplies or services for operating telephone companies

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Burroughs Adding Machine Company, Second Blvd., Detroit, Mich. — Adding, Bookkeeping, Calculating, Billing and Accounting Machines, Electric Carriage Typewriters, Standard Typewriters, Operator Correct-Posture Chairs. Burroughs machines are in use today in hundreds of progressive telephone companies throughout the country.

BATTERIES—DRY CELLS

Burgess Battery Co., Freeport, Ill.—Burgess Flashlights and Uni-Cel Flashlight Batteries—for dependability and service. The Burgess Twin-Six Telephone Battery—a 3-volt unit designed to replace two No. 6 cells, with longer life, lighter weight, smaller size and a leakproof case. The Burgess Little-Six—replaces the old type No. 6 cell, is smaller and lighter, will not ooze or bulge, has all the electrical capacity of the standard No. 6 cell.

National Carbon Company, 30 E. 42nd St., New York.—"Columbia" Telephone Dry Batteries; "Eveready" Flashlights, Flashlight Batteries and Long Life Dry Cells, "National Pyramid" brushes, carbon, graphite and metal graphite for motors, generators and rotary converters. "Eveready" Prestone anti-freeze; "Eveready" Rustone rust preventive; and "Eveready" Air Cell telephone operators' transmitter batteries.

Ray-O-Vac Company, Madison, Wis.—Ray-O-Vac telephone batteries — longer life and better service proven by tests in accordance with U. S. Government standards and records of users. Ray-O-Vac flashlights and industrial flashlight batteries are other items showing Ray-O-Vac's outstanding quality.

BATTERIES—STORAGE

The Electric Storage Battery Company, Allegheny Ave. and 19th St., Philadelphia, Pa.—Exide Storage Batteries. Branches: Boston, New York, Rochester, Philadelphia, Pittsburgh, Washington, Atlanta, Cincinnati, Cleveland, Detroit, Chicago, Kansas City, Minneapolis, St. Louis, Denver, San Francisco and Seattle.

Philco (Battery Division) Tioga and C Streets, Philadelphia, Pa.—Philco Flote in Steel-Glass Storage Batteries for P. B. X. and central office operation. Your old batteries will command a liberal allowance toward any Flote in Steel-Glass Cell from 10 A.H. to 1056 A.H. Write now for catalog ...it will tell you the complete story of Flote in Steel-Glass—the finest of telephone batteries.

BATTERY CHARGING EQUIPMENT

General Electric Company, Bridgeport, Conn.—Tungar battery chargers. G-E pole line hardware. Cable filling compound.

North Electric Mfg. Co., Galion, Ohio. — Self-regulating battery chargers.

CABLE—LEAD ENCASED

American Electrical Works, Phillipsdale, R. I.—Paper telephone cable, switchboard cable, bare copper wire. Chicago Office: 20 N. Wacker Drive; Cincinnati: Traction Bldg.; New York: 100 E. 42nd St.

British Insulated Cables, Ltd., Surrey House, Embankment, W. C. 2, Factory: Prescot, Lancashire, England.—Telephone cable of all sizes and capacities.

General Cable Corporation, 420 Lexington Ave., New York, N. Y.—Paper telephone cables of standardized manufacture for over forty years. Weatherproof and insulated copperweld drop wire.

Eugene F. Phillips Electrical Works, Ltd., Montreal, Can.—For any type of wire or cable used in telephone, telegraph or power work get in touch with "Phillips." Manufacturers of bare and insulated copper wires, rubber insulated wires, enameled wire, magnet wire, telephone cables, power cables, switchboard cables, flexible cords, copper rods, etc.

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National Telephone Supply Company, 5100 Superior Ave., Cleveland, Ohio.—National Cable Rings, National Splicing Sleeves, Non-Breakable Messenger Cable Hangers, Marlin and Swisher Cable Hangers and Custom Galvanizers. National cable rings are practical because they are two-way,—they allow the cable to be pulled in either direction. National sleeves make secure the weakest points in the line. If it's a splice—make it a National.

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Cook Electric Company, 2700 Southport Ave., Chicago, Ill.—Protective Pole Cable Terminals, Unprotected Pole Cable Terminals, central office protection, lighting arresters, sleeves, fuses.

Reliable Electric Company, 3145 Carroll Ave., Chicago, Ill.—Complete line of cable terminals, telephone and switchboard protectors, sleeves, fuses, solderless wire connectors and specialties.

CARBON DIAPHRAGMS

Noris Carbon Company, Inc., 160 8th Ave., New York, N. Y.—Carbon diaphragms, carbon back plates, granular and globular carbons, lightning arresters.

CORDS, CABLE AND WIRE

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POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

International Creosoting and Construction Company, Galveston, Texas—Creosoted Southern Yellow Pine Poles. Plants: Beaumont and Texarkana, Texas.

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Valentine Clark Corporation, 2516 Doswell Ave., St. Paul, Minn.—Finished Cedar Poles. Plain or Butt treated.

SUPPLIES, SWITCHBOARDS AND INSTRUMENTS

American Automatic Electric Sales Company, 1033 West Van Buren Street, Chicago, Ill.—Public Automatic Telephone Systems, Private Automatic Telephone Systems, Central Battery and Magneto Manual Telephone Switchboards, Remote Control Switchboards, Telephone Instruments of all types, Battery Eliminators, Charging Equipment, Signaling and Control Apparatus, Cords, Wires, Cables, Monotype Copperweld Drop Wire, and a complete line of construction materials and supplies.

Automatic Electric Company, 1033 W. Van Buren St., Chicago, Ill.—Public Automatic Dial Systems, Private Automatic Dial Systems, Telephones, relays, signaling and control equipment.

Automatic Electric Company, Ltd., Milton Road, Edge Lane, Liverpool, England.—Automatic Telephone Equipment.

Automatic Electric Sales Company, Ltd., 1027 W. Van Buren St., Chicago, Ill.—Public Automatic Dial Systems, Private Automatic Dial Systems, Manual Telephone Equipment, telephones, storage batteries, wire, cable, poles, etc.

Kellogg Switchboard & Supply Company, Adams & Aberdeen Sts., Chicago, Ill.—Engineers and designers, manufacturers and suppliers of complete equipment for telephone exchanges and communication systems. Manufacturers of "Master-built" Common Battery, Magneto and PBX Switchboards, "Masterphone" Telephone Instruments, and a complete line of telephone supplies, including bronze drop and interior wire.

North Electric Manufacturing Company, Galion, Ohio—Machine switching telephone systems. Automanual and Automatic. "All-Relay" Switching Apparatus (Dialless and Dial Control). Unattended Satellite Systems. Dials (automatic).

Siemens Brothers & Company, Ltd., Woolwich, England—Automatic and Manual Telephone Equipment.

Stromberg-Carlson Telephone Manufacturing Company, 100 Carlson Road, Rochester, N. Y. — Telephone apparatus of all kinds, switchboard cords, cable and general telephone supplies.

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Crescent Tool Co., Jamestown, N. Y.—CRESTOLOY Pliers, Curved Needle Nose Pliers, Heavy Diagonal Cutting Pliers, Linemen's Side Cutting Pliers, End Cutting Nippers, Crescent Hack Saws.

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RURAL ELECTRIFICATION PROGRAM

(Concluded from page 22)

culty, common to both municipal plants and privately-operated systems.

I was in Madison, Wis., recently, attending a hearing called by the public service commission for the purpose of getting information as to the manner in which the present rules governing extensions of electric lines were to be modified, if at all. It appears that a cooperative is not a utility and, therefore, outside of the jurisdiction of the public utility laws of that state.

Nevertheless, the local official of the REA and other persons interested in cooperatives asked that the utilities be compelled to stop solicitation of new customers in those districts where a cooperative was in the formative stage. They seemed to have forgotten that the nearby utility had probably been soliciting customers in a portion of the area contemplated for the cooperatives for five or more years, and that only recently—with higher farm prices—has there been any hope of getting them to sign up for service.

In many or most of the mass meetings which have been addressed by representatives of this program, farmers have been told that this rural electrification project would not only save them money in obtaining electric service, but it was planned to establish government depots for furnishing to them, at cost, supplies, appliances and electric equipment of all kinds, as well as a cooperative program for doing their wiring at cost.

Since electricity can not be used by itself you can easily imagine how this might branch out to include plumbing, deep-well pumps, feed grinders, silo fillers, milking machines and a host of other things too numerous to mention. You can well imagine how highly pleasing this would be to jobbers, contractors, and dealers and merchants of all kinds, whether electrical or otherwise.

In speculating as to what the future will bring forth, we must keep in mind the following points:

1. The government is insisting upon extremely low rates to the farmer. This will necessitate the lowest construction cost possible and will probably result in very meager maintenance of lines.

2. Such cheap construction and meager maintenance, after a few years have gone by, may result in radio interference, hazards to life and property along highways and substandard service.

3. Will the construction of lines along the highways bring forth the demand at a later date that telephone wires be placed on the same poles?